# SUBSTANCE USE IN A SAMPLE OF SOUTH KOREAN ADOLESCENTS: A TEST OF ALTERNATIVE THEORIES

By

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Abstract of Dissertation Presented to the Graduate School
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Adolescent substance use has been widely studied in the United States, as well as in Canada and in Europe. There has much less attention to this problem in Korea and other Asian societies. The major theories of adolescent deviance have been developed in America and the question is to what extent are they also applicable to other cultures. This study tested three theoretical models to explain adolescent substance use in a sample of South Korean high school students.

The main purpose of this study is to determine how well each of the theories do and how well they do compared to each other in explaining substance use by South Korean adolescents. In addition, since three theories include family and/or peer variables, the purpose is also to explore the direct,

indirect, and relative influences of peers and parents on substance use by South Korean adolescents.

The data for this investigation came from a questionnaire survey among a sample of high school students in Pusan, South Korea. The total sample size was 1,035 individuals. The research instrument used was a 150-item questionnaire, containing questions regarding alcohol, tobacco, depressant, stimulant, tranquilizer, inhalant, marijuana, and other hard drug use, socio-demographic information, and measures of variables in the theoretical models.

Multiple OLS regression analysis indicated that social learning theory was strongly supported as an explanation for substance use by South Korean adolescents. Social bonding and self-control theories also were supported to some extent. However, when variables derived from these theories were placed in the same equation with social learning variables, most of their effects disappeared, while social learning variables retained their strength.

Results indicated that adolescents, regardless of drug use behavior, generally reported stronger influence from peers than parents. This result is also more congruent with social learning theory than with the other two theories. Even in South Korean society, where the stability and authority of family is greater than in American society, peers have a more direct influence on adolescent substance use than do parents. The findings indicate that these western theories of deviance, especially social learning theory, are not culture bound and can be validly applied to adolescent deviance in South Korean society.

# CHAPTER 1
# INTRODUCTION

## Statement of Problem

Adolescent drug use, including not only illicit drugs but also licit drugs such as cigarettes, alcohol, and prescription and over-the-counter medication, is a known and feared phenomenon in American society and elsewhere. Numerous recent authors suggest that involvement in such behavior has become a national concern, whether the substance is tobacco (Arneklev et al., 1993; Flewelling & Bauman, 1990; Labouvie, 1996; Urberg et al., 1991; Wang et al., 1997; Wood et al., 1995), alcohol (Bahr et al., 1995; Barnes & Farrell, 1992; Burkett, 1993; Catalano et al., 1996; Coombs et al., 1991; Peterson et al., 1994), marijuana (Bjerregaard & Smith, 1993; Esbensen & Elliott, 1994; Esbensen & Huizinga, 1993; Krohn et al., 1997), or other drugs (Grichting & Barber, 1989; Kaplan, 1996; Krohn et al., 1996; Maddux & Desmond, 1989; Winfree et al., 1993).

Alcohol and drug abuse present society with enormous costs as well as a litany of drug-related problems and damage to persons and society (Akers, 1992). It is estimated that 100,000 Americans die every year as a result of drug use (McKenry & Price, 1994). Furthermore, alcohol, drug abuse, and nicotine abuse are still numbered among the most serious health problems in America, especially among young people. Deaths of adolescents and young adults from injuries and accidents are often related to substance abuse. Persons who are

addicted to substances are also at higher risk for a variety of other health problems, such as lower immunity to infections, short-term memory impairment, and even malnutrition.

The relatively high prevalence of drug and alcohol abuse in the United States, especially after the Vietnam War, has exacted extremely high costs in economic and human resources. For example, in 1985 it was estimated that Americans paid approximately $44.1 billion to deal with the problems of drug abuse, including drug treatment, drug-related crimes, law enforcement, loss of health, and decreased productivity on the job (McKenry & Price, 1994). The IRS has estimated that the value of the illicit drug trade is between $25 and $30 billion each year. Each year an estimated 2 million individuals are hospitalized for drug problems and three-fourths of these are persons aged 15 to 44 years (Rice et al., 1991).

The long-term psychological effects of many drugs also have been documented in increasing work and school related difficulties for all age groups. Higher drug use is associated with low social and intellectual skills, such as poor problem solving and impaired social relationships. Depression, hostility, and anxiety are among the many results of long-term substance abuse. However, although so many Americans are addicted to the so-called soft and legal drugs (alcohol and nicotine), they are reluctant to call their own use of addictive substances "drug abuse." Such attitudes of denial impede the necessary diagnosis and treatment of many addictions for Americans.

There is also a strong statistical correlation between illegal drug use and criminal behavior (Inciardi, et al., 1994; 1993). The data indicated that the majority of felony arrests in the United States involve current illegal drug users. Studies of non-incarcerated drug-using populations indicate that the majority have extensive arrest and incarceration histories. Finally, general population surveys show a correlation between drug use and delinquency and criminal behavior.

To put this in perspective, the United States is not alone in enormous drug problems. Adolescent drug use has also become a major social problem in South Korea. Drug crimes in South Korea have become very serious and diversified. The number of people who are using drugs has increased a lot in recent years (Kim & Park, 1995). According to The Supreme Public Prosecutors Office (1995), arrests of juveniles, most of whom are using inhalants such as butane gas, chemical bond, and industrial glue, increased from 3,995 in 1992 to 6,277 in 1995. According to the KIC (Korean Institute of Criminology) study, among prison inmates, drug abuse appeared to have substantial influence on criminal behavior. The longer one abuses drugs, the more criminal careers pile up (Kim & Park, 1995). Furthermore, the Korean Youth Association (1996) reported that 8.6% of middle school students, 16.2% of high school students, 12.7% of college students, 20.8% of working adolescents, and 64% of juvenile delinquents have used illicit drugs.

These kinds of data are informative and help to gauge the seriousness of the problem, but they do not answer questions such as why do some people use

substances and the others don't and who are more likely to use drugs? A wide range of theories has been offered to explain adolescent drug and alcohol use. In the past two decades, the social learning and social bonding (control) theories have come to dominate sociological explanations of alcohol and drug use.

Criteria for evaluating good theory include internal logical consistency and conceptual clarity, scope and accuracy, parsimony, testability, empirical validity, and usefulness and policy implication (see Akers, 1997:6-13). Akers (1997) argued that the acid test of a scientific theory is empirical validity, the extent to which a theory can be verified with carefully gathered evidence. Using these criteria, the social learning and social bonding theories have emerged in the literature as the foremost candidates for explaining adolescent deviant behavior and drug use (Agnew, 1991b; Akers, 1997; Empey & Stafford, 1991; Gibbons & Krohn, 1991). In addition, in the past decade, Gottfredson and Hirschi's (1990) general theory of crime has attracted much attention and has been tested by prominent criminologists and sociologists on a variety of deviant behavior.

Basic concepts, derived from the social learning and social bonding theories on adolescent drug use, and a considerable amount of research, focus on how parents and peers influence the risk of drug use. Some scholars have observed the powerful influence of peers on adolescent drug use, whereas others have found parents play an important role in the process of adolescent drug use. Although peer influence seems dominant and parental influence is viewed as the embodiment of traditional values in society influencing the

adolescent to conform, considerable disagreement remains regarding how these effects operate.

Prior research shows that adolescent drug use is strongly influenced by association with drug-using peers (Agnew, 1991a; Ary et al., 1993; Flay et al., 1994; Hawkins et al., 1985; Lohrmann & Fors, 1986; McGee, 1992). Early drug involvement is encouraged by the drug-related attitudes and behaviors of friends (Akers et al. 1979; Elliott et al., 1985; Kandel & Adler, 1982).

It has also been shown that strong bonds with parents mitigate against youthful involvement with drugs and drug-using peers. Supportive parent-child relationships also are inversely associated with adolescent substance use (Lewis et al., 1990; Smart et al., 1990). A growing body of literature attests to the importance of parental roles in shaping adolescent attitudes and behavior toward drug use (Barber, 1992; Coombs & Landsverk, 1988; Hundleby & Mercer, 1987).

Although the total effects have been well documented, the results are inconsistent. For example, it is unclear whether the effects are direct or indirect, and the relative influence of parents and peers on adolescent drug use is still a matter of debate. In addition, research has seldom examined the different effects of parents and peers on adolescent drug use in South Korea and little is known about licit and illicit drug differences in the influences of parents and friends in Korean Society. Whether peers play as prominent a role in drug use in the traditional family oriented culture of South Korea as in the youth oriented culture of America is not known.

## The Purpose of the Study

Testing theories have become a significant part of the literature on adolescent drug use, and some of this literature attempts to compare two or more theories (Akers & Cochran, 1985; Benda, 1994; Benda & DiBlasio, 1991; Kandel & Davies, 1991; Krohn et al., 1984; Matsueda & Heimer 1987; McGee, 1992; White et al., 1987). There are also a few cross-cultural studies (Bruinsma, 1992; Kandel & Adler, 1982; Zhang & Messner, 1995). However, this is the first study to evaluate the relative explanatory power of social learning, social bonding, and self-control theories with data on adolescent drug use in South Korea. In South Korea, studies have been largely limited to descriptive reports that are related to incidence and prevalence of drug use, socio-demographic correlates, examining categories of drugs such as alcohol, tobacco, marijuana, and other drugs. The existing studies have ignored theoretical questions. There is an absence of research dealing with evaluating different criminological theories on adolescent drug use in South Korea.

The dissertation research proposed here will, first, empirically test the major concepts of three major theories of deviance to determine how well they do in explaining adolescent drug use in a sample of South Korean youth. Second, this study will investigate the direct, indirect, and relative influence of peer and parents on the use of alcohol, tobacco, marijuana, and other drugs in that same sample. This study is particularly interested in seeking answers to the following research questions:

1) How well social learning, social bonding, and self-control theories respectively explain adolescent drug use, and which has the most empirical support in South Korea?
2) Does an integrated model of all three explain adolescent drug use better than any of them alone in South Korea?
3) Are adolescent drug use, drinking, and smoking more influenced by peers than by parents in South Korea?

The data for this investigation came from a questionnaire survey among a sample of high school students in Pusan, South Korea. The total sample size was 1,035 individuals. A questionnaire was constructed for this project from existing self-report instruments and from new items, measuring social learning, social bonding, self-control concepts, substance use, and socio-demographic variables.

## The Significance of the Study

This study should be valuable in understanding the explanatory power of all three theories on adolescent substance abuse in the contemporary Korean society compared to that in the United States. Are theories developed and tested in western societies capable of accounting for adolescent deviance in an Asian society? Are they culture-bound theories that need to be substituted or modified in other societies? Research in North America provides considerable support for social learning theory and also to a lesser extent control theories. Research also

shows that peer influence is greater than parental influence on adolescent deviant behavior in the United States.

In South Korean society, where the stability and authority of family are greater than it is in the United States, will parents exert more influence than peers over adolescent substance use? Answers to these questions will provide a cross-cultural comparison that will aid in the explanation and scope of these three major theories of deviance. Do they identify variables operative in only one kind of society or are they generalizable to different kind of societies?

# CHAPTER 2
# LITERATURE REVIEW

The literature review in this chapter will be restricted to the following areas: 1) comparing the literature related to general patterns of adolescent drug use between in Korea and in the United States, 2) the theoretical approaches which have emerged from the field of criminology and deviance and applied to adolescent substance use, 3) the relationship between parental and peer influences on adolescent drug use.

In the first review, this study examines the definitions and major types of drugs in Korea, followed by general reviews of licit and illicit drugs by the youth population in Korea and the United States. This includes adolescents between the ages of approximately 13 and 18. The majority of information on drug use comes from students in middle school through high school seniors. The drugs included for review are alcohol, tobacco, marijuana, inhalants, and stimulants. These drugs are the most widely used among Korean adolescents. For each drug, information is presented on frequency with which it is used and general trends through the past two decades.

Next, whereas empirical research on social learning, social bonding, self-control theories, parental, and peer influences on adolescent drug use in the United States is extensive, the empirical studies on the above issues in Korea are extremely limited. For this reason, this chapter predominantly summarizes findings from American studies.

Definitions of Use, Abuse, and Types of Drugs in Korea

A drug is any substance that has a psychoactive, chemical, or medicinal effect when ingested and which is socially defined as a drug (Akers, 1992:15). Drug use is the general term used to refer to both legitimate and illegitimate use of substances and the full range of use patterns from the lightest to the most habitual (Akers, 1992:15). Akers argues that drug abuse is the misuse of legal and illegal drugs (Akers, 1992:15). Others maintain that drug abuse is any use of a psychoactive drug, including legal drugs, which causes problems for the user (Annis & Davis, 1991).

However, there is no accurate definition of drug abuse in Korea. Some define it as any use of drugs, while others argue that only use which is heavy, unusual or excessive constitutes abuse. Others insist it is any drug use involving illicit drugs. Therefore, drug addiction, drug abuse, drug dependence, and substance abuse have been used as the definition of drug abuse. For the purpose of this study, drug use is the consumption of any drug other than for medical purposes and abuse is any misuse of legal and illegal drugs.

The classification of drugs in Korea is similar to classifications in the United States and elsewhere. It is based on their demonstrated primary effects on the central nervous system through their impact on the neurotransmitters and on particular centers in the brain. The drugs dealt with in this study include only those, which have been implicated in non-medicinal, recreational use and abuse. Some tranquilizers and depressants are legally produced as medication by prescription. Others have no legal production and distribution and any use is illegal, whereas alcohol and tobacco are legal substances, but not for juveniles.

The pharmacological effects of the drugs are the same regardless of the society where they are consumed. Further, the legal status of the substances is similar in both Korea and the United States.

However, the patterns of use do vary by societies. Table 2.1[1] provides a summary of drug use and type of drug used by adolescents in Korea and the United States. In general, Korean youth as compared with youth in the United States, have a lower level of exposure to every drug that is included in the survey. The differences come from only higher percentages of Korean young people than percentages of American young people who have tried stimulants in their lifetime, the past year, and the past month (11.0% versus 3.3%, 5.0% versus 1.8%, and 2.5% versus 0.6%, respectively). Thus, there are societal differences in levels of use. There are also societal differences in the process by which use is initiated and sustained.

Table 2.1 shows that use of either of the two major licit drugs, alcohol and tobacco, remains more widespread than use of any of the illicit drugs in both countries. A very high proportion of both groups have tried alcohol and cigarettes. The proportion that has tried cigarette in their lifetime and the past month, however, is quite different. Only 29.6% and 15.4% of Korean youths

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[1] The Korean sample was selected from randomly generated census reports and stratified for 22 geographical regions, gender, and three age groups. A total of 13,620 respondents who were made up of 56.5% females and 43.5% males are included in the data set. Ages ranged from 9 to 24 years, with majority being in the 13-18 year age range. The American sample was selected from the estimated 214 million members of the civilian, noninstitutionalized population age 12 and older in the United States. For the purpose of comparison study, the data shown in Table 2.1 were only selected from two age groups (12-17 and 18-25).

Table 2.1: Substance Use among Adolescent in Korea and the United States

| | Korean Youth | | | American Youth | | |
|---|---|---|---|---|---|---|
| | Lifetime | Past Year | Past Month | Lifetime | Past Year | Past Month |
| Alcohol | 71.8 | 51.2 | 29.6 | 66.3 | 54 | 40 |
| Tobacco | 29.6 | 19.3 | 15.4 | 52.4 | 33.5 | 28.3 |
| Stimulants | 11 | 5 | 2.5 | 3.3 | 1.8 | 0.6 |
| Inhalants | 8.4 | 4.6 | 2.8 | 8.4 | 3.5 | 1.4 |
| Tranquillizers | 3.6 | 2 | 0.9 | 3.4 | 1.8 | 0.6 |
| Marijuana | 0.8 | 0.3 | 0.3 | 30.4 | 20.9 | 10.2 |
| Cocaine | 0.5 | 0.3 | 0.3 | 6.1 | 3.1 | 1.3 |
| Heroin | 0.4 | 0.1 | 0.2 | 0.8 | 0.6 | 0.3 |
| Hallucinogens | 0.6 | 0.3 | 0.3 | 10.9 | 5.6 | 2.2 |

(Adapted and Modified from Korean Youth Association, *A Research on Present Conditions and Preventive Strategies of Adolescent Drug Abuse*, Seoul: Ministry of Culture and Sport, Korea, 1996; National Clearinghouse for Alcohol and Drug Information, *National Household Survey on Drug Abuse Main Findings* 1996, Rockville, MD: National Clearinghouse for Alcohol and Drug Information, 1996)

have used cigarette in their lifetime and the past month, while 52.4% and 28.3% of American youths have done so. These two drugs are legal for adults, enjoy widespread public acceptance, and are tried by a large majority of adolescents before they reach adulthood. Although these two drugs are legal for adults, they are not legal for adolescents. As Kandel (1974) reported, there is a possibility that adolescents move from tobacco and alcohol use to marijuana use and then to other illicit use of drugs. Involvement at one stage of drug use does not necessarily lead to drug involvement in the next stage, but youths who use one drug early are likely to use other drugs at an earlier age and are more likely to abuse drugs. Drug use, especially early drug use, is likely to be related to other deviant behavior in Korea (Cha & Choi, 1993).

The difference in use of inhalants is not great, although the proportion of inhalant use in the past year (4.6% versus 3.5%) and the past month (2.8%

versus 1.4%) is slightly higher among Korean youth. The largest difference in the two populations, however, is for marijuana. Except for alcohol and tobacco, it is the drug that American young people are most likely to try. In contrast, among Korean youth, fewer than 1% have tried it. Cocaine, heroin, and hallucinogens are little used by Korean adolescents compared to American young people. Finally, in the national survey of Korea, although the results do not show here, males generally used drugs more than females. But in the cases of stimulants and tranquilizers, females used more than males. The overall results are clear. Korean youths have a much lower level of exposure to drugs in general with a particularly low level of involvement in marijuana, cocaine, and hallucinogens.

Alcohol

Alcohol is the most widely used psychoactive substance in Korea as well as America today and this fact is as true among adolescents as it is among their adults. Though a legal and accepted element in both Korean society and American society, alcohol must be ranked as a major drug of abuse.

For example, results from the KIC(Korean Institute of Criminology) survey (Lee, 1995) indicated that among a sample of 13 to 18 years old, the majority began using alcohol at the age of 13 or 14. Park (1996) and Kim (1993) also argued that middle and high school students aged 13 to 18 estimated the average age for first trial as 14 to 16 years.

The majority of studies on adolescent drug use indicate that approximately half of adolescents have used alcohol in the past year (KADCC, 1997; KYA, 1996; Lee, 1995; Park, 1996). The Korean Youth Survey conducted by the

Ministry of Culture and Sports (1996) reported that 51.2% of adolescents used alcohol in the past year. The most recent figures show that 75.7% of students in Seoul (KADCC, 1997), 73.6% of students in Cheung-Ju (Park, 1996), 62.4% of students in Tae-Ku (Kim, 1993) used alcohol in the past year.

Even though systematic trend data for periods prior to the 1980 are not available for alcohol use among students, since the 1980s, several studies have found reduction in the level of adolescent drinking until 1993. However, recently studies indicate that adolescent drinking is increasing (Ju, 1997:138).

Tobacco

The high proportions of smokers are of particular interest since early cigarette use has been implicated as an antecedent factor in the use of other drugs, both licit and illicit (Elliott et al., 1985). The smoking of tobacco cigarettes is now generally recognized as a hazardous practice. Smoking is widely regarded as one of the most tenacious habits and as one of the leading causes of disease.

Tobacco has been found to rank second to alcohol in prevalence of lifetime and current use among adolescents. Of a nationally representative sample of youths aged 13 to 18, 15.4% reported themselves as current smokers (approximately 30% of sample had tried cigarettes) (KYA, 1996). Consistent with these data, 24.1% of middle and high school students reported themselves as current smokers, with 33.1% of them have tried cigarettes (Kim & Park, 1995). In addition, KADCC (Korean Anti-Drug Campaign Center) reported that among

sample of 13 to 18 adolescents in Seoul, 36.4% of students had used cigarettes, with 69.3% smoking at least half a pack of cigarettes per day (KADCC, 1997).

Different from many other drugs, the prevalence of cigarette use has reportedly decreased among adolescents. In 1980, 44.9% of youths claimed to be smokers, with decreasing 38.5% in 1982, 39.5% in 1989, 37.6% in 1990, 29.9% in 1991, 29.4 % in 1992, and 29.6 % in 1996 (Ju, 1997).

Meanwhile, in the national survey in 1996, large differences were found between prevalence of males and females who smoked in their lifetimes, past year, and past month (29.6 versus 19.3, 19.3 versus 11.0, and 15.4 versus 7.6 percent, respectively). That is, males appeared to be much more likely to be heavy smokers.

Marijuana

Marijuana is usually smoked in hand-made cigarettes or in pipes. The smoke is held in the lungs and absorbed directly into the bloodstream via the same process as absorption of tobacco smoke. Users report the main psychic effects are mild euphoria, changes in perception (heightened appreciation of sounds and colors, for example), and an apparent slowdown in the passage of time (Polich et al., 1984). Users may laugh frequently, become hungry and thirsty, or engage in disjointed conversations with unconnected thoughts and speech (Cox et al., 1983).

As lifetime prevalence and current use statistics presented in Table 2.1, American youth were experimenting with marijuana at a much higher rate. In the United States, 30.4%, 20.9%, and 10.2% of young people have tried to use it in

their lifetime, the past year, and the past month, as compared to less than 1% of Korean young people used it.

In Korea, prior to the mid-1970s, there was almost no use of marijuana among Korean youths or high school students. The late 1970s, however, saw a wave of interest in marijuana, which has continued into the present. At its peak, around 1980–1982 marijuana was used by 8.7% of high school seniors and 22% of college students. However, since 1990, marijuana use has decreased. In 1991, 1992, and 1993, 0.6%, 1.0%, and 1.5% of high school seniors aged 18 have ever used it (Ju, 1996:139).

Recent results of several studies suggest that generally between 0.5 and 1.2% of adolescents in Korea have used marijuana (KYA, 1996; KADCC, 1997). While the percentage of marijuana use by adolescents in the general population is low, according to the KIC survey (Kim & Park, 1995), 21% of adjudicated juvenile delinquents have frequently used marijuana.

Inhalants (Bond, Sinna, and Butane-Gas)

A number of common household solvents, cleaners, and aerosols, butane gas, and industrial glues have been inhaled by teenagers who are not regularly part of the illegal drug trade. At one time, the most frequent practice of this type was glue sniffing-placing ordinary airplane or plastic-model glue in a bag or sock and inhaling the fumes (Akers, 1992:34).

Student use of industrial glue, chemical bond, and butane gas appears to be higher than marijuana in Korea. That is, in the United States, except for alcohol and tobacco, marijuana is widely used by adolescents and young adults,

while inhalant use with depressant use is greater than any other illicit drug uses in Korea. Glue has been used in Korea by 4.3% of students while 4.1% used butane gas (KYA, 1996). This compares closely to figures from the KIC survey where 4.9% of students have used glue, and 3.9% used butane gas as well as the KADCC survey where 3.5% have been used glue.

However, the level of inhalant use among students varies across Korea. In Pusan 18.3% of students reported use (Lee, 1995) compared to 9.4% in Taegu (Park, 1996) and 2.0% in Chongju (Park, 1995). Like the prevalence of marijuana use by juvenile delinquents, most juvenile delinquents used glue and chemical bond daily. Among the juvenile delinquents, industrial glue and chemical bond are the most widely used (85.7%) and abused (83.2%), followed by tobacco abuse (80.7%) and alcohol (79.0%).

The prevalence of inhalant use has reportedly decreased among adolescents. In 1980, inhalants were used by 11.5% of high school seniors and 13.2% of middle school seniors. According to a 1982 survey, however, middle school seniors (10.4%) used them more than high school seniors (6.2%). In 1989, high school seniors again used them more than middle school seniors (3.2% versus 0.6%). In 1991, 1992, and 1993, inhalants were used by 2.5%, 3.0%, and 2.2%, respectively, of high school seniors.

Depressants

Not all of depressant, stimulant, and tranquilizer use among adolescents is illicit. Prescription drugs constitute an important part of total student drug use in Korea. They are of particular interest and concern since they are used by

students for both medical and non-medical reasons. Depressants are orally taken and by injection. When absorbed into the system, they inhibit a number of different regions of the brain, depress respiration, and decrease neurotransmitter action (Corry & Cimbolic, 1985).

Depressant use by adolescents is extremely higher than marijuana use and even than tobacco use in Korea compared with depressant use in the United States. The national survey indicated that among a sample of 13 to 18 years old, 44% of students reported use of depressants in the past year (KYA, 1996). Survey in Chongju (Park, 1996) has also shown that 68% of middle and high school students have used depressants. Kwon (1990) reported that 66.5% of junior and senior high school students in Seoul have used them.

However, unlike alcohol, tobacco, and inhalant use by Korean adolescents, females are more likely to use depressants than males. According to the national survey (KYA, 1996), females are more likely to use depressants than males in their lifetime, the past year, and the past month (71% vs. 61%; 50% vs. 38%; and 26% vs. 15%, respectively). This result is consistent with the previous studies in Korea (Kim & Park, 1995; Kwon, 1990; Park, 1996).

Stimulants

Stimulants comprise a large number of drugs, including common substances like caffeine and nicotine, which increase activity in the central and autonomic nervous systems. Some are natural substances (cocaine, caffeine), while others, such as amphetamines, are entirely synthetic and relatively new.

It is remarkable that like inhalant use, stimulant use by adolescents is also higher than marijuana use in Korea. According to the national survey conducted by KYA, 11% of the 13 to 18 age group had a lifetime use of stimulants in 1996. The survey in Chongju (Park, 1996) has also shown that 17.2% of males and 18.8% of females had used them. However, the prevalence of stimulants from the KIC survey (Kim & Park, 1995) is lower than national survey; only 5.4% of middle and high school students have used them. One point seems clear in reviewing the data on adolescent drug uses. Stimulant use has become more acceptable among the nation's adolescents.

The prevalence of stimulants shows some fluctuations. In a 1977 survey, 26.4% of high school seniors claimed to be users. In 1980, however, the rate had increased to 32.4% (29.6% of males and 35.1% of females), and in 1982 and 1989 it was down again to 29.4% and 17.0%. This downward trend remained until 1992; in 1990, 1991, and 1992, users numbered 8.6%, 8.6%, and 7.2%. In 1993, the rate increased to 11.5% (11.3% of males and 11.6% of females).

It is obvious from this literature review that an important issue exists regarding adolescent drug use and abuse in Korea and the United States. With regard to the comparison between patterns of drug use in two countries, it is interesting that inhalant and stimulant use are greater than marijuana use in Korea, while marijuana is the most widely used illegal drug by young people in the United States. This may result from the easier availability of inhalants and stimulants in Korea. They can be purchased without a doctor's prescription in drug stores in Korea.

In relation to adolescent drug use in Korea, all the evidence shows a decline in overall drug use until 1993. These declines are important because youths who use alcohol and tobacco seem to search for other drugs; because laws related to drugs such as "The Narcotics Control Law," "The Psycho-Active Medicines Control Law," "The Tae-Ma Control Law" and "The Toxic Chemicals Control Law" were reformed and reinforced in 1989; and because of the fact that the Department of Drugs in The Supreme Public Prosecutors Office was established and has executed strong control as well as an enlightenment campaign against adolescent substance use. Despite declines in the past decade, however, there is growing public concern about the use of drugs among youths. In spite of this concern and monitoring drug use among young people, it is evident that substance use is subject to variation and may begin to increase rapidly. For example, since 1993, the rate of drug use by adolescents has again increased and rapidly increased in 1996 due to loose laws, regulations, and the enlightenment campaign on adolescent drug use and abuse.

## Social Learning Theory

Social learning theory refers primarily to the theory of crime and deviance developed by Ronald L. Akers. Akers' social learning theory was originally proposed in collaboration with Rober L. Burgess (Burgess & Akers, 1966) as a behavioristic reformulation of Edwin H. Sutherland's differential association theory of crime (Akers, 1997).

According to Sutherland, criminality is not inherited, but learned in the same way that any other behavior is learned through interpersonal

communication and social interaction in intimate groups. What is learned through this process includes particular attitudes and motivations as well as techniques for committing crimes. However, being exposed to criminal attitudes and motivations and even knowing how to commit a crime does not mean that a person will engage in criminal activity. To quote Cressey, "A person becomes delinquent because of an excess of definitions favorable to violation of law over definitions unfavorable to violation of law" (Cressey, 1960:2). Sutherland called the process of social interaction by which such definitions are acquired differential association. Sutherland chose the term *differential association*[2] to emphasize that, "In any society, the two kinds of definitions of what is desirable in reference to legal codes exist side by side, and a person might present contradictory definitions to another person at different times and in different situations" (Cressey, 1960:2).

Although Sutherland's differential association theory has had a strong influence on sociology, his theoretical propositions were criticized for being too vague and difficult to measure. In an effort to provide a more adequate specification of the social learning process required in the differential association

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[2] Sutherland specified four ways in which deviant association may vary. The first is the *frequency* with which one associates with deviant others. The greater the frequency, the greater the likelihood of deviance. The second deals with the intensity of one's deviant associations. *Intensity* refers to the degree to which one identifies with deviant others. The third conditions specified by Sutherland is *priority*, the term Sutherland used to indicate how early in life deviant influences occur. Apparently, the earlier one is exposed to deviant definitions, the greater the chance that one will develop deviant behavior patterns. The fourth condition is *duration*; it refers to the length of time spent with deviant role modes. Therefore, the more frequent, intense, early, and enduring one's differential associations with criminal patterns, the more likely it is that criminal behavior will result.

by Sutherland, Burgess and Akers (1966) reformulated Sutherland's original theory.[3] They contend that the principles of learning derived from operant conditioning could help to recast Sutherland's initial ideas into a general theory of deviance.

Like Sutherland, Burgess and Akers maintain that criminal behavior is learned. However, the way it is learned, they argue, is through direct *operant*

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[3] To make differential association theory more testable and to clarify the learning process it implies, Burgess and Akers (1966) reformulated Sutherland's nine propositions into seven statements by combining the first and eight, dropping the ninth, and revising each original statement by using behavioral concepts and propositions. The seven-statement of Burgess-Akers theory reads (Akers, 1998:45)

1. Criminal behavior is learned according to the principles of operant conditioning.
2. Criminal behavior is learned both in nonsocial situations that are reinforcing or discriminative and through that social interaction in which the behavior of other person is reinforcing or discriminative for criminal behavior.
3. The principal part of the learning of criminal behavior occurs in those groups which comprise the individual's major source of reinforcement.
4. The learning of criminal behavior, including specific techniques, attitudes, and avoidance procedures, is a function of the effective and available reinforcers, and the existing reinforcement contingencies.
5. The specific class of behaviors which are learned and their frequency of occurrence are a function of the reinforcers which are effective and available, and the rules or norms by which these reinforcers are applied.
6. Criminal behavior is a function of norms which are discriminative for criminal behavior, the learning of which takes place when such behavior is more highly reinforced than noncriminal behavior.
7. The strength of criminal behavior is a direct function of the amount, frequency, and probability of its reinforcement.

*conditioning* and *imitation* or *modeling* of others. According to Akers, the form the behavior takes and its frequency of recurrence depend on *instrumental conditioning;* that is, the behavior is learned or conditioned as a result of the effects, outcomes, or consequences it has on an individual's environment.

Behavior is reinforced when the consequences it has or the reactions of others encourage an individual to do the same thing again when confronted with similar circumstances. In other words, consequences of behavior have feedback effect that causes the behavior to be sustained and increase in frequency. Sometimes this occurs by rewarding the behavior (*positive reinforcement*). However, a behavior may also be reinforced if engaging in it allows a person to prevent or avoid an unpleasant or painful stimulus (*negative reinforcement*). Punishment also may be positive or negative but, unlike reinforcement, the predicted effect of punishment is to weaken a behavior or to extinguish it altogether. When an unpleasant or painful response such as a slap follows a behavior, the punishment is *considered positive punishment.* If a privilege or reward is taken away in response to a behavior, this is *negative punishment.* Thus, *reinforcers* increase the probability that behaviors will be repeated, while *punishers* decrease the probability that behaviors will be repeated.

Another important concept in operant conditioning theory is discriminative stimulus. A discriminate stimulus is a stimulus event that signals to an individual that reinforcement or punishment is about to occur. There are many different kinds of discriminative stimuli. As Burgess and Akers indicate, one of the most important is a verbal stimulus, or the words and phrases people use in connection with deviant behaviors. They note that Sutherland's concept of

"definitions favorable to law violation" may be understood as discriminative stimuli of the verbal kind. For example, individuals often utter certain statements that tend to justify deviant acts or to remove guilt associated with them. These utterances or "vocabularies of motive" are learned. Once learned, they may continue as discriminative stimuli, setting the stage for the commission of future deviant acts. By recasting Sutherland's concept of definitions favoring violation of the law into discriminative stimuli, Burgess and Akers (1966) believe they have made Sutherland's original statement more consistent with present principles of learning.

Later, Akers (1985; 1997; 1998) further developed the theory, labeling it "social learning theory". Akers' social learning theory is composed of four major concepts: differential association, definition, differential reinforcement, and imitation (Akers, 1985; 1997; 1998).

**Differential association** refers to the individuals and groups (primary groups such as friends and family as well as secondary groups such as colleagues and work groups) with whom one identifies and interacts. It is differential association with others that one is exposed to and learns definitions, is exposed to behavioral models, and receives social reinforcement or punishment for taking or refraining from some action. One's own behavior tends to be congruent with the behavior of those with whom he or she is in association. According to Akers (1997:64);

> Differential association has both behavioral *interactional* and *normative* dimension. The interactional dimension is the direct association and interaction with others who engage in certain kinds of behavior, as well as the indirect association and identification with more distant reference groups. The normative dimension is the different patterns of norms and values to which an individual is exposed through this

> association... Those associations which occur first (priority), last longer (duration), occur more frequently (frequency), and involve others with whom one has the more important or closer relationships (intensity) with have the greater effect.

**Definitions** as used in social learning theory are attitudes, beliefs, or verbalizations which define for the actor what is appropriate or inappropriate. That is, what should and should not be done in a social situation. Thus, one may hold favorable definitions conducive to taking some action or unfavorable definitions leading to refraining from taking some action. Akers (1997:65) maintains that;

> In social learning theory, these definitions are both *general* and *specific*. General beliefs include religious, moral, and other conventional values and norms that are favorable to conforming behavior and unfavorable to committing any deviant or criminal acts. Specific definitions orient the person to particular acts or series of acts... Approving definitions favorable to the commission of criminal or deviant behavior are basically *positive* or *neutralizing*. Neutralizing definitions[4] favor the commission of crime by justifying or excusing it. They view the act as something that is probably undesirable but, given the situation, is nonetheless all right, justified, excusable, necessary, or not really bad to do.

A third variable in the social learning model is **differential reinforcement**, which is the balance of rewarding or desired outcomes and negative or undesirable consequences of actions. The greater the reinforcement, on balance, contingent on or anticipated for a given action, the more likely it is to be taken and repeated. The most important of these are the social reinforcement and punishment through the approval or disapproval of one's peers and other

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[4] Neutralizing attitudes include such beliefs as, "Everybody has a racket," "I can't help myself, I was born this way," "I am not at fault," "I am not responsible," "I was drunk and didn't know what I was doing," "I just blew my top," "They can afford it," "He deserved it," and other excuses and justification for committing deviant acts and victimizing others (Akers, 1997:65).

significant groups and individuals. However, in social learning theory (Akers, 1997:66);

> Reinforcers and punishers can be non-social; for example, the direct physical effects of drugs and alcohol. However, whether or not these effects are experienced positively or negatively is contingent upon previously learned expectations. Through social reinforcement, one learns to interpret the effects as pleasurable and enjoyable or as frightening and unpleasant. Individuals can learn without contact, directly or indirectly, with social reinforcers and punisher. There may be a physiological basis for the tendency of some individuals (such as those prone to sensation-seeking) more than others to find certain forms of deviant behavior intrinsically rewarding.

The fourth major concept in social learning theory is **modeling** or **imitation,** which is the process of modeling one's actions on the behavior of significant others. Observing a model who is immediately punished in some way for engaging in an act, is not likely to lead to the imitation of that act. However, if the model is rewarded for the behavior, then the act is more likely to be imitated. Modeling is more important in the initial acquisition and performance of novel behavior than in the maintenance or cessation of behavioral patterns once established, but it continues to have some facilitative effect in maintaining or changing behavior (Akers, 1998:75).

There is a large body of evidence that supports social learning theory as an explanation of deviant drug use (Agnew, 1991a; 1993; 1994; Andrews, 1980; Burkett & Jensen 1975; Burkett & Warren, 1987; Conger, 1976; Conger & Simons, 1995; Dabney, 1995; Dembo et al., 1986; Dull, 1983; Elliott et al., 1985; Fagan & Wexler, 1987; Inciardi et al., 1993; Jensen, 1972; Johnson et al., 1987; Kandel & Davies, 1991; Kandel, 1987; Krohn, 1974; LaGrange & White, 1985; Lauritsen, 1993; Marcos et al., 1986; Massey & Krohn., 1986; Matsueda, 1982; Matsueda & Heimer 1987; McGee, 1992; Meier et al., 1984; Minor, 1980; Orcutt,

1987; Patterson & Dishion, 1985; Rowe & Gulley, 1992; Warr, 1993a; 1993b; 1996; Warr & Stafford, 1991; White et al., 1986; White et al., 1987; Winfree & Backstrom, 1994; Winfree & Griffiths, 1983; Winfree et al., 1989; Winfree et al., 1993; Wood et al., 1995).

While all of the social learning variables are important, the impact of differential peer association is the most fully substantiated and replicated finding in delinquent research. As Kandel (1978) has asserted, the differential peer association is stronger than for any other determinant of delinquency, alcohol and drug use, and other forms of deviant behavior. More frequent, longer-term, and closer association with peers who do not commit or support deviant behavior is strongly correlated with conformity, while a greater ratio of associations with peers who engage in and approve of delinquency is predictive of one's own delinquent behavior (Akers, 1998:116).

Research conducted by Akers and his associates (Akers, 1998; Akers, 1997:75) in which all of key social learning variables are measured support the social learning model.

> The first of these was the Boys Town study of adolescent substance use and abuse among approximately 3,000 students in grades 7 through 12 in eight communities of the mid-west (Akers & Cochran 1985; Akers et al., 1979; Krohn et al., 1982; Lanza-Kaduce et al., 1984). The second was a 5-year longitudinal study of smoking among junior and senior high school students in Muscatine, Iowa (Akers et al., 1987; Krohn et al., 1985; Lauer et al., 1982; Spear & Akers, 1988). The third research was a 4-year longitudinal study of conforming and deviant drinking among 1,410 elderly respondents in four communities in Florida and New Jersey. (Akers & La Greca, 1991; Akers et al., 1989)

The main focus of the Boys Town study was on explanation of abstaining and frequency of use of alcoholic beverages, tobacco, marijuana, and other drugs, including variations in abuse of these substances as a specific test of the

general social learning theory. The results support the theory. Strong bivariate relationships were found with peer associations and attitudes, one's own positive/negative definitions, reinforcement balance, and the rewards-costs of use. Multiple regression analyses showed that more than half of the total variance (R-Square = .54) in frequency of drinking and over two-thirds of the variance (R-Square = .68) in marijuana use were accounted for by the theoretical variables.

When empirically evaluated against other theories, using the same data collected from the same samples, variables derived from social learning theory are usually found to have stronger effects than variables taken from the other theories (Akers & Cochran, 1985; Benda, 1994; Burton et al., 1994; Conger, 1976; Johnson, 1979; Kandel & Davies, 1991; Matsueda, 1982; Matsueda & Heimer, 1987; McGee, 1992; White et al., 1986). Similarly, when social learning variables are included in integrated or combined models what incorporate variables from different theories, it is the social learning variables that have the strongest main and net effects (Catalano et al., 1996; Elliott et al., 1985; Kaplan, 1996; Kaplan et al., 1987; Thornberry et al., 1994).

McGee (1992) tested the hypothesis that the effect of parental and peer influence on adolescent drug use, using data extracted from the 1985 version of Monitoring the Future. Using variables derived from the social control, social learning, and strain theories of delinquency, strongest support is found for the social learning perspective in that peer influence has the greatest effect on adolescent drug use and the effect of parental influence on adolescent drug use based on social control theory is insignificant. Social learning variables have

been tested by research in Israel, Ireland, Europe, Taiwan, and China. They provide considerable support for social learning theory (Bruinsma, 1992; Junger-Tas, 1992; Kandel & Adler, 1982; Nolan, 1994; Zhang & Messner 1995). These findings lead to the expectation that the theory will be supported in the proposed research in Korea. However, Korean society and culture are different from any of these cultures, and it may be that the theory does not apply as well as social bonding or self-control theory.

From this overview of social learning theory, previous research indicated that social learning variables singly and in combination are strongly related to various forms of deviant, delinquent and drug use studies in the United States and other societies. The social learning theory also produced high levels of explained variance, much more than other theoretical models with which it was compared. The main hypothesis for this theory is that the social learning model should account for a significant amount of variation on the dependent variables of alcohol and drug abuse in Korea. The specific hypotheses dealing with the social learning variables are as follows:

1. Persons who score higher on scales of attitudes, beliefs, or verbalization of drug abuse, indicating definitions favorable towards drug abuse, will report greater drug use and abuse.
2. Persons who report more modeling of drug using peers or significant others will report greater drug use and abuse.
3. Persons who associate with others who use drugs or hold attitudes favorable to drug abuse, indicating differential association with drug

use-supportive primary groups or peer groups, will report greater drug use and abuse.

4. Persons who anticipate and/or receive greater reward than aversive consequences of drug use, thus indicating differential reinforcement of drug use, will report greater drug use and abuse.

## Social Bonding Theory

Social control theorists assume that humans are inherently anti-social and capable of committing deviant acts. Because deviant behavior is a natural response in the face of rules and scarce resources, control theorists assume that conformity rather than deviance must be explained. In the context of drug use, it is assumed that drugs are readily available in society and that it is natural for people to experiment with and use drugs. Rather than asking "why do people use drugs?," the question is "why don't people use drugs?" Therefore, there is no need to explain why adolescents take drugs but, rather, why they do not. However, as Akers (1997; 1998) argues, there is really a matter of emphasis. The dependent variable of use and non-use or frequency of use is the same whether control theories or other theories are being tested.

All of the earlier control theories were superseded by the version proposed by Travis Hirschi (1969), who remains today the major control theorist. His control theory is usually referred to as social bonding theory (Akers, 1997). Hirschi's social bond consists of four elements–attachment, commitment, involvement, and belief.

**Attachment** refers to the affective relationships that one has with other people. The "attached" individual is reluctant to deviate since to do so would invite negative evaluation from people whose opinion the person values. Deviation from the norms would cause a sense of loss of bond to others. However, those persons without strong emotional bond will lose contact with the humanity of society and thus will be more inclined to deviate. The stronger the tie to conventional others, the less likely the adolescent will be to jeopardize those relationships by engaging in disapproved behavior. Thus, the quality of the relationship of parents with their children has been found to be related to adolescent alcohol and drug use (Jessor, 1976; Kandel, 1978; Marguiles et al., 1977).

**Commitment**, the second part of the theory refers to an adolescent's participation in and evaluation of present and anticipated conventional activities (e.g., school, religion). The committed adolescent is a person who feels that it is important to pursue goals that are socially approved. Having developed a stake in conformity, deviance may threaten his or her ability to participate in conventional activities. If a person is very committed to the society, then it is less likely that he or she will get involved in deviant drug use. Commitment to school or school-related activities has been found to be inversely related to adolescent drug use (Bachman et al., 1981; Banks et al., 1978; Bewley & Bland, 1977; Blair et al., 1980; Casswell & Hood, 1977; Rooney & Wright, 1979; Stanhope, 1978).

**Involvement,** the third variable, refers to the notion that individuals who are well-integrated into the conventional social order simply do not have much time to engage in deviant behavior. The quality of a youth's activities and their

relationship to future goals and objectives are important in preventing delinquency. However, some researchers have argued (Akers & Cochran, 1985; Conger, 1976; Hawkins & Weis, 1985; Hindelang, 1973; Krohn & Massey, 1980), that considerable conceptual and empirical overlap exists between involvement and commitment. Time spent in conventional activities is perhaps better understood and operationalized as the temporal dimension of commitment.

The final element of social bonding theory is belief. **Belief** is acceptance of the moral validity of the central social value system (Hirschi, 1969:203). People who are sensitive to the generalized expectations, norms, and values of society are unlikely candidates for deviance. While Hirschi emphasized the importance of generalized beliefs, research on adolescent cigarette smoking has focused primarily on specific positive and negative beliefs about smoking (Krosnick and Judd 1982). Fishbein and Ajzen (1975) have argued that these more "proximal" beliefs are the best predictors of smoking initiation. Chassin et al. (1981) have found support for the contention that general beliefs are important only to the extent that they impact more proximal beliefs.

However, Akers (1997) points out that there is considerable conceptual overlap of the "belief" concept in bonding theory and the "definitions" concept in social learning theory. When beliefs are measured as the "proximal" beliefs specific to smoking or drug use, they are empirically the same as definitions favorable and unfavorable. Akers (1998) resolves this issue by assigning general beliefs to bonding and specific beliefs to learning theory when empirically comparing the two theories. Although they should have known, Krosnick and Judd (1982), Fishbein and Ajzen (1975), Chassin et al. (1981), and other

researcher do not make the connection between these proximal beliefs and the concept of definitions in social learning theory.

Hirschi's social bonding theory predicts that adolescents who have strong bonds of attachment to their parents, school, and law-abiding peer; who are committed to conventional lines of behavior; who are involved in conventional activities; and who believe in the rules of the larger, conventional system are less likely to pursue delinquent life-styles.

A number of researchers have found support for the social bonding theory of adolescent drug use. Krohn and Massey (1980) found that social bonding was a good predictor of less severe forms of deviance (drinking and marijuana use, minor acts of delinquency), and a somewhat weaker predictor of more severe delinquency (use of hard drugs and major acts of delinquency). Krohn, et al. (1983) conducted a longitudinal study of social bonding's ability to predict adolescent smoking, and found that, of the four variables, belief and commitment were the strongest predictors of abstention from smoking, however, attachment to friends and commitment to work were positively related with smoking behavior, a finding at odds with predictions. Akers and Cochran (1985) found moderate support for the theory. Attachment, commitment/involvement, and beliefs were significantly related to marijuana use. The element of commitment and belief showed the strongest influence on the frequency of marijuana use, with attachment showed only a weak relationship. However, the effects of the bonding variables are much weaker than peer association and reinforcement or specific attitudes toward marijuana smoking.

Agnew (1991a) found that attachment is not related and that commitment is only weakly related to minor delinquency and that social bonding variables have the expected, but weak, longitudinal effect on delinquency (Agnew, 1991b). Bahr, et al. (1995) have found that the influence of family bonds is moderately strong but operated primarily through peers; adolescents with higher family bonds are less likely to have close friends who are involved with drugs. Overall, social bonding theory has received consistent empirical support, although the strength of that support is weak to moderate. Hypotheses from the social bonding theory of adolescent drug use are as follows:

1. The stronger the attachment to society and others, in perceived closeness to family and peers, the lower the frequency of drug use.
2. The stronger the commitment to conformity, in the form of career aspirations and desires to be a respected and admired member of the community, the lower the frequency of drug use.
3. The stronger the involvement with normative activities, in the form of heavy involvement in school and extracurricular activities of a structure, normative nature, the lower the frequency of drug use.
4. The stronger the belief in societal norms, in the form of agreement with the correctness of the law and respect for authority, the lower the frequency of drug use.

This theory should have good predictive value overall, if drug use is affected by a strong bonds to society. Each of the individual elements of the theory should themselves display predictive power as well, although it may be the case that one or more of the elements is less predictive than the others.

## Self-Control Theory

Gottfredson and Hirschi (1990) have proposed a general theory of crime in which the central exploratory concept is "Self-Control."[5] They contend that the propensity to engage in criminal behavior, in the presence of opportunity, is caused by low self-control. Low self-control is also said to be the cause of what Gottfredson and Hirschi refer to as "analogous" behavior which includes alcohol, drug, and tobacco use. Low self-control is itself an outcome of ineffective childhood socialization wherein parents do not closely monitor the child's behavior, do not recognize misbehavior when it occurs, and neglect to punish the child for it (Gottfredson and Hirschi, 1990:97). Once established in childhood, individuals' levels of self-control remain stable over the life course and are relatively unaffected by other institutions (1990:107-108). Instead, self-control affects individuals' performances or outcomes in institution such as school, the labor force, and marriage that they encounter later in life (1990:154-158). Those with low self-control not only are more likely to commit crime and engage in analogous behavior, but also are more likely to be unsuccessful in school, the

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[5] In term of interpretation of self-control, Brownfield and Sorenson (1993) suggest that although they seem to equate "criminality" with low self-control, Gottfredson and Hirschi explicitly reject alternative conceptualizations to self-control, such as criminality and "conscience." They argue that criminality suggests a positivistic or deterministic conception in which individuals are compelled to commit crimes. The criminality concept further suggests that there may be specialization in crimes committed and that only certain types of people may commit criminal acts, whereas self-control implies none of these things. Gottfredson and Hirschi state that conscience also implies compulsion to act and seems to denote feelings of guilt about contemplated acts instead of an explanation for such behavior. "Character" might be a more acceptable or accurate synonym for "self-control."

labor force, and marriage. Gottfredson and Hirschi do not explicitly enumerate the elements of the concept of self-control, but a careful reading of their work suggests that six essential elements make up low self-control (Arneklev et al., 1993; Grasmick et al., 1993).

First, the ability to defer gratification is characteristic of those with a high level of self-control, since people with higher levels of self-control are able to recognize that crimes and imprudent behaviors "provide few or meager long-term benefit"(Gottfredson & Hirschi, 1990). This component of low self-control appears to be an **impulsivity**, which is an important theme in Wilson and Herrnstein's (1985) *Crime and Human Nature*.

Second, low self-control involves a tendency to "lack diligent, tenacious, or persistent in the course of action" so that people with low self-control prefer "easy or simple gratification of desire" and try to avoid complex tasks (1990:89). Crime allows the individual to satisfy desire easily or without effort. Crime "provides money without work, sex without courtship, revenge without court delays" (1990: 89). This suggests that low self-control contains an element of preference for **simple tasks**.

Third, the characteristic of people with low self-control is a tendency to be "adventuresome" rather than "cautious" because criminal acts are "exciting, risky, or thrilling (1990:89)." Therefore, offenders tend to be more adventuresome and physical than non-offenders. This component of low self-control seems to be a **risk-seeking** element.

Fourth, low self-control embraces a preference for physical activity rather than "cognitive" or "mental activity" (1990:89). Since crimes and imprudent

behaviors "require little skill or planning" (1990:89), persons who tend to be less mental, verbal, and knowledge-oriented can engage in them easily. Therefore the fourth aspect of low self-control appears to be **physical activities**.

Fifth, "people with low self-control tend to be self-centered, indifferent, or insensitive to the suffering of others"(1990:89). This fifth element of low self-control appears to be a **self-centered** trait. Finally, "people with low self-control tend to have minimal tolerance for frustration and little ability to respond to conflict through verbal rather than physical means"(1990:90). This final trait appears to be a **temper** component. To summarize the concept of self-control, Gottfredson and Hirschi (1990) argue that those who are impulsive, oriented to simple tasks, risk-seeking, physically active, self-centered, and low-tolerance are likely to engage in crime and analogous acts.[6]

Research has shown that self-control is related to self-reported crime and intentions to break the law among juveniles, college students, and adults (Burton et al., 1994; Evans et al., 1997; Gibbs & Giever, 1995; Gibbs et al., 1994; Grasmick et al., 1993; Keane et al., 1993; Nagin & Paternoster, 1993; Piquero & Tibbetts, 1996; Wood et al., 1993); has effects even when controlling for measures of competing theories of crime (Brownfield & Sorenson, 1993; Burton et al., 1994; Nagin & Paternoster, 1993; Piquero & Tibbetts, 1996; Polakowski, 1994); predicts future criminal convictions and self-reported delinquency

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[6] One point should be noted about the elements comprising low self-control. Gottfredson and Hirschi (1990) clearly assert that these six traits are not alternative ways of having low self-control; rather, they form a single unidimensional latent trait. As they suggest, "There is considerable tendency for these traits to come together in the same people, and since the traits tend to persist through life, it seems reasonable to consider them as comprising a stable construct useful in the explanation of crime"(1990:90-91).

(Polakowski 1994; Tremblay et al. 1995); and is related not only to illegal conduct but also to analogous or imprudent behaviors (Arneklev et al., 1993; Tremblay et al., 1995; Wood et al., 1993).

Evans, et al. (1997), using two distinct measures of self-control, an attitudinal measure and the analogous/behavioral scale, found that both measures of self-control, attitudinal and behavioral, have effects on crime, even when controlling for a range of social factors. Further, the analysis revealed general support for the theory's prediction of negative relationships between low self-control and social consequences other than crime-life outcomes and quality of life. Polakowski (1995), employing structural equation techniques supported by several propositions of self-control theory, found that self-control subsumes several personality disorders and is significantly comprised by early behavioral indicators of aggression and fighting, is inversely related to the elements of the social bond, is moderately stable over a short period of time, and significantly predicts criminal convictions. Gibbs & Giever (1995) also found that self-control theory is supported by the relatively strong performance of self-control in terms of its independent impact on both drinking and class cutting.

However, since most of the research has not devised direct measures of self-control, some research findings have resulted in the mixed support for the theory (Arneklev et al., 1993; Brownfield & Sorenson, 1993). Arneklew et al., (1993), examining the link between low self-control and imprudent behaviors such as smoking, drinking and gambling, suggests that the results are mixed. In support of the theory, the data reveal a modest but significant effect of a scale designed to capture the various components of low self-control on an index of

imprudent behavior. A more detailed analysis, however, reveals that some of the components of low self-control, specifically those probably linked to low intelligence, detract from the scale's predictive power. Furthermore, one of the analogous acts, smoking, appears to be unaffected by low self-control.

Brownfield and Sorenson (1993), analyzing the construct of self-control and its relationship to official and self-reported measures of juvenile delinquency, found that the index of self-control did not significantly affect self-reported delinquency, controlling for measures such as peer delinquency, parental attachment, and belief. However, the index of self-control is significantly related to official measure of delinquency. In general, self-control theory is logically consistent, is parsimonious, and has wide scope. To date, however, there has not been enough research conducted to test self-control theory directly and some of contradictory findings of self-control theory suggest the need for theoretical refinements. Hypotheses from the self-control theory of adolescent drug use are as follows:

1. Persons who score higher on the scale of impulsivity, temptation of immediate gratification, and few or meager long-term benefits, will report greater alcohol and drug use.
2. Persons who prefer to take simple tasks and easy or simple gratification of desires, will report greater alcohol and drug use.
3. Persons who score higher on the scale of risk-seeking elements, will report greater alcohol and drug use.
4. Persons who tend to be less mental, verbal, and knowledge-oriented, will report greater alcohol and drug use.

5. Persons who score higher on the scale of self-centered, indifferent, or insensitive to the suffering of others, will report greater alcohol and drug use.
6. Persons who have minimal tolerance for frustration and little ability to respond to conflict through verbal as opposed to physical means, will report greater alcohol and drug use.

Parental and Peer Influences on Adolescent Substance Use

Bonding theory includes attachment to both parents and peers, but otherwise downplays the effects of peers on deviance and focuses on parental attachment, supervision, and disciplinary practices. Similarly, Gottfredson and Hirschi see self-control as the product of parental socialization and learning in the family, and give no role for peer groups in delinquency. Learning theory highlights and utilizes learning processes occurring in both the family and peer groups, but stresses the latter in explanation of adolescent deviance. Therefore, the issue of parental and peer influence, and which has more importance in adolescent drug use, is a consideration in testing these theories. In addition, this question has been an important one in studies of adolescent deviance regardless of theoretical perspective. It becomes particularly relevant in comparing use in different societies in which there are cultural differences in family and peer contexts.

A considerable amount of studies have identified the powerful influence of peers on adolescent drug use. According to lots of research, the single best predictor of adolescent drug use is the extent to which one associates with other

adolescents who use drugs (Akers et al., 1979; Ary et al., 1993; Aseltine, 1995; Bailey & Hubbard, 1990; Bauman et al., 1990; Brook et al., 1990; Elliott et al., 1985; Flay et al., 1994; Kandel, 1986; McGee, 1992; Oetting et al., 1991).

McGee (1992), in a study of parental and peer influence on adolescent drug use, using variables derived from the social control, social learning and strain theories of delinquency, argues that strongest support is found for the social learning perspective in the peer influence and the effect of parental influence on drug use is insignificant. Similarly, Flay et al. (1994), in the study of differential influence of parental and friends' smoking suggest that friends' smoking affects adolescent initiation into smoking both directly and indirectly, whereas parental smoking influences smoking initiation only indirectly. In addition, many studies have demonstrated that friends' smoking is a better predictor of an adolescent's smoking than is parental smoking (e.g., Alexander et al., 1983; Chassin et al., 1986; McCaul et al., 1982).

Also, Hawkins et al. (1985) identified peer factor as "among the strongest predictors of adolescent drug use" other researchers concur. Lohrmann and Fors (1986), in an examination of adolescent motivation to abuse drugs, identified "low peer control, higher value for peer expectations than parental expectations, and low parental disapproval of and high peer approval for participation in problem behaviors" among major factors associated with drug use. Ried and others (1987) found students' perceptions of their peer's drug use had over twice as much influence on drug use as the students' own attitudes. Agnew (1991a) argues that peer influence is one of the strongest predictor of delinquency. Strong support is found for the effects of delinquent peers on

delinquency, mediated by such factors as attachment to peers, time spent with peers, and the extent to which peers present definitions favorable to delinquency.

Although adolescent drug use has been viewed primarily as a peer-related phenomenon, a number of researchers have found that parent-adolescent relationships have a significant impact on the risk of adolescent drug use. There are at least three broad dimensions of parent-adolescent relationships: bond, support, and control.

Hawkins et al. (1992) identified low bonding to family as a risk factor in adolescent drug use. A study by Coombs et al. (1991) using 446 Anglo and Hispanic youths, ages 9-17, indicated that parental influence was more profound than that of peers. Brook et al. (1983) also examined how stages of adolescent drug use were related to characteristics of the family and peer group. They found that low parental warmth and high parental rejection were associated with a higher stage of drug use regardless of the nature of the peer group. Several other researchers have indicated that strong-bonds with parents have a significant influence on the amount of adolescent drug use (Coombs & Landsverk, 1988; Dembo et al., 1985; Hansen et al., 1987; Johnson & Pandina, 1991).

Family support has been found to be the important predictors of adolescent outcomes even after taking into account critical demographic/family factors, including socio-economic(SES) indicators, age, gender, and race of the adolescent, family history of alcohol abuse (Barnes & Farrell, 1992). A study involving 152 drug-using adolescents and their families (Lewis, Piercy, Sprenkle, & Trepper, 1990) indicated that the more closeness perceived by each member

of the family, the less likely the adolescents were to use harder drugs. Similar results were found by Smart et al. (1990). Andrews et al. (1991) found that girls who use harder drugs reported their families as significantly less cohesive, and that they had more conflicts with their parents, than girls using soft drugs; the parents' perception of family cohesion was also lower. These researchers concluded that poor relationships in the family were a risk factor for the transition to harder drugs for both boys and girls.

The control dimension of family processes is somewhat more complicated. Control is usually seen as multidimensional with its association to adolescent behavioral outcomes depending more on the consistency, types, and degree of control attempts (Barber, 1992). Lack of parental affection, concern, involvement and modeling appeared to be central factors in the family's influence, which accounted for up to 22% of the variance in drug use in a study by Hundleby and Mercer (1987). Coombs and Landsverk (1988) also agreed that substance use is less frequent for younger subjects and for those who experience more favorable sentiment from their fathers, have more family rules, and more often receive mother's advice and guidance.

Since both family and peer group variables have proved to play an important role in adolescent drug use, a number of recent studies have considered family and peer group variables jointly. Within the same family/peer constellation, peers are more influential regarding deviant activities and immediate issues pertaining to lifestyles, such as drinking and the use of other drugs, whereas parents are more influential regarding long-term goals, such as educational aspirations (Kandel, 1986).

Parents have both direct and indirect effects on their children's deviance. Direct parental effects arise through role modeling, through social reinforcement, and through the quality of the parent-child interaction, especially monitoring of the child's activities and, less consistently, closeness (Brook et al., 1990; Chilcoat et al., 1995; Dishion & Poe, 1994; Gorman & White, 1995; Kandel & Wu, 1995; Loeber et al., 1991; and Melby et al., 1993). Parents have an indirect influence on their children's deviance through choice of friends. That is, learning in primary groups such as peers and parents is the chief explanation for drug use, but family bonds may influence the choice of friends. Parents can prevent their children from engaging in drug use, controlling their children to choose drug-using friends. Kandel and Andrews (1987) found that in the ongoing drug using behaviors the effects of closeness to parents are likely to be indirectly through peer variables, and these indirect effects are stronger than the direct effects. A study by Bahr et al. (1995) using data from 322 adolescents and their parents who lived in three counties of a state in the western United States, indicated that parental monitoring and family drug use have significant effects on the risk of adolescent drug use and abuse through the choice of friends.

# CHAPTER 3
# RESEARCH METHODS

## Sampling and Procedures

The data in this study were gathered by administering a self-report questionnaire[1] to Korean adolescents in the summer of 1999. Both time and monetary limitations prevented a national sample. Therefore, Pusan, a metropolitan area, was selected as the research site. The city of Pusan contains 16 districts (Gu). The target population for the study consisted of students attending the 10th and 11th grade of the Pusan high schools. Stratified sampling was used. The student population was stratified by district, gender, and high school system[2] (liberal and industrial), and students were selected from those strata at random.

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[1] Self-report questionnaire techniques have shown to be reliable and valid measure of substance use and deviant behavior by adolescents (see, Akers & Cochran, 1985).

[2] In Korea, all students spend six years in elementary school then go up to three years of middle school. Middle school graduation is mandatory. Upon graduation from middle school level, students have to take a national test. Those who score well on the test can enter into a "liberal" high school that is preparatory to university entry. Those who do not do well normally will select one of the "industrial" high schools such as the technical, commercial, and informational high schools according to their preferences. Most high school seniors in the liberal school are able to enter into four years university after taking another national test which is similar to the SAT test in America. On the other hand, industrial high school students try to get a manual job after graduation and have essentially no opportunity for a college or university education.

To obtain as representative a sample as possible, the sample design is two staged. In the first stage of the research, the key stratification criteria for the selection of schools are geographical location (district) and quality of school. In Pusan, different districts exhibit different social characteristics, and thus geographical dispersion is important for maximizing representativeness. In addition, schools in Korea are commonly differentiated into two general quality levels; liberal (high or middle quality) and industrial (middle or low quality). The target population was first subdivided into four mutually exclusive segments such as boys' liberal high school, boys' industrial high school, girls' liberal high school, and girls' industrial high school. From the sixteen participating high school districts in Pusan, which range from low to high – residential areas, the schools were selected on the basis of gender and quality of school system within the district. Thus, schools were selected from districts throughout the city of Pusan and from each of the two quality levels.

In accordance with those criteria, 26 schools which are underlined in Appendix A were selected from 136 high schools of Pusan. Appendix A provides classified and selected high schools for the study. The sample of this study consists of 10 boys' liberal high schools (38.5 %), 6 boys' industrial high schools (23.1 %), 5 girls' liberal high schools (19.2%), and 5 girls' industrial high schools (19.2 %) from 16 districts in Pusan. Two of the high schools (Seakang and Kijang high school) are in a small town outside the metropolitan Pusan area, while the other twenty-four are within the metropolitan area.

In the second step, once the number of high schools to be selected from each district was determined, the class was selected. The classroom in each high school was randomly sampled from the required or general enrollment classes and all students in that class were included in the sample. In general, each high school classroom in Pusan as well as Korea is composed of 40 to 45 students. Therefore, the total sample size of this study is approximately 1,000 high school students. While this sampling procedure does not yield a true random sample of students, it is nevertheless the best means available for preventing systematic selection bias. It allows every student an equal chance to be selected.

The questionnaire was administered to all students in attendance in the selected class who had obtained written permission from the school principal prior to the day of the survey.[3] With each class, the teacher was not present during the test. Instead, the researcher introduced himself as a graduate student of sociology department, engaged in a study of adolescent substance use. The questionnaire instruments were distributed by the researcher, and the informed consent statement read to the students. They were informed as to the complete anonymity and confidentiality of their responses, and were shown the ballot-box style receptacle for the questionnaire instrument. The respondents then completed the instrument and placed it in the box. Respondents normally took between thirty and forty minutes to complete their questionnaire.

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[3] However, there is a attrition in the sample; students who have been kicked out of school or moved to a different school district.

After collection, the individual questionnaire instruments were examined for completeness and stray marks. Any multiple responses were coded as missing data, and all cases which were significantly incomplete were grouped so that comparisons could be made between incomplete cases and complete cases to determine if there were significant differences between the two groups.

## Data Entry, Cleaning, and Coding

It was observed during data cleaning that twenty-three cases were significantly incomplete to the point where analysis would be impossible. The cases were from 8 cases of boys' liberal high school students, 7 cases of boys' industrial students, 5 cases of girls' liberal students, and 3 cases of industrial students. Thus, 23 cases were excluded from analyses and total cases included analyses were 1,012 high school students.

All questions and variables were coded in the direction of relationship expected by each theory. In the social learning theory, the greater the reinforcement, more favorable the definitions, the more exposure to models and the greater the peer behavior supportive of substance use, the greater substance use. The social learning variables were coded such that a positive coefficient indicates that the higher score on social learning variables, the higher the levels of reported substance use. For the social learning models, therefore, positive coefficients indicate the theoretically expected direction of the association.

The social bonding variables were coded such that negative coefficients are in the direction expected by the theory. This is done because social bonding

theory hypothesizes that the greater the attachment, commitment, involvement, and belief, the lower will be substance use. In the self-control theory, the higher impulsivity, simple tasks, risk-seeking, physical activity, self-centered, and low tolerance, the higher the level of substance use. The variables were coded so that a positive coefficient indicates that the relationship is in the theoretically expected direction.

## Measurements

Social learning variables used in the questionnaires were taken from the Boys Town Study conducted by Akers and his associates in 1970s.[4] Social bonding variables were adopted and modified from the study conducted in a large metropolitan area of the Southwestern United States in 1980s by Marcos et al.[5] Self-control variables were derived from a 1991 survey of a large Southwestern city conducted by Arneklev and his associates and the 13th annual Oklahoma City survey conducted by Grasmick and his associates in spring 1991.[6]

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4 See, Akers, R.L., M.D. Krohn, L. Lanza-Kaduce, and M. Radosevich. (1979). "Social learning and deviant behavior: a specific test of a general theory" *American Sociological Review* 44:636-655.

5 See, Marcos, Anastasios C., Stephen J. Bahr, and Richard E. Johnson. (1986). "Test of bonding/association theory of adolescent drug use." *Social Forces* 65:135-161.

6 See, Arneklev, Bruce J., Harold G. Grasmick, Charles R. Tittle, and Robert J. Bursik. (1993). "Low self-control and imprudent behavior." *Journal of Quantitative Criminology* 9:225-247, and Grasmick, Harold G., Charles R. Tittle, Jr. Bursik, Robert J., and Bruce J. Arneklev. (1993). "Testing the core empirical

The questionnaires used in the study were principally designed to be as close as possible to ones used in the American study while considering the cultural and social context of Korea. Translation is a very difficult process in cross-national research and requires special considerations. The researcher did his best to assure comparable measures. To get a comparable questionnaire, the questionnaire was first translated from English to Korean by the researcher. The translated material was then back-translated from Korean to English by a Korean-American in the Korean Baptist Church of Gainesville. After that, the back-translation material was compared with the original version. After back-translation and the construction of the Korean questionnaire, the modified questionnaire was examined and judged by several criminological experts familiar with the study in Korea.

To detect any questions which were ambiguously worded or which had inappropriate response alternatives, a pre-test on a small sample (N=20) of high school students in Korea was conducted using a draft of the questionnaire. Although the utility of independent variables derived from three theoretical models was well established in the United States, it was reasonable to suspect that not all these variables were equally useful in Korea. For this critical considerations, a reliability analysis was used to confirm conceptualization of the variables.

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implications of Gottfredson and Hirschi's general theory of crime." *Journal of Research in Crime and Delinquency* 30:5-29.

Dependent Variables

In this study, substance use was measured by self-report on the use of two legal drugs – alcohol and tobacco and six types of illegal drugs–depressants (Geborin, Saridon, Penjal, Sedaphin, Nubain), stimulants (Timing, Night, Esnanine, Reglin), tranquilizers (Ruminal, Atiban, Barium, Ceconal, Barbiturates), inhalants (Bond, Sinna, Butane-Gas), and other hard drugs (Philophone, Narcotics, Morphine, Cocaine, LSD). Most drugs such as Geborin, Timing, Atiban, Phonal, and Ruminal are brand names produced by Korean pharmaceutical companies and adolescents who have ever used them are familiar with the brand names.

Each drug use was measured by two different questions. The first question asked frequency of lifetime drug use: "How often have you ever used it in your lifetime?" The second question asked frequency of past year drug use: "How often have you ever used it in the past 12 months?" Response options were - never, once or twice, several times, less than once a month, once or twice a month, at least once a week, but not everyday, and every day or nearly everyday.

Since these two questions on substance use were a near perfect Cronbach's Alpha for some substances and were high for almost all of the others (item-to-item correlation was $\alpha$=.95 on alcohol, $\alpha$=.98 on tobacco, $\alpha$=.89 on depressants, $\alpha$=.84 on stimulants, $\alpha$=.87 on tranquilizers, $\alpha$=.79 on inhalants, and $\alpha$=.71 on marijuana), the latter (substance use in the past 12 months) was the only dependent variable used in this analysis.

Independent Variables

Socio-demographic variables

Although socio-demographic variables can be used to index theoretically relevant structural variables (Akers, 1998), they are included here as control variables in the models. This section of the questionnaire dealt with gender, grade level, school type, family structure, family income, parents' occupational level, parents' educational level, and religious affiliation. Gender was coded as zero (0) for female and one (1) for male. Grade level was coded as zero (0) for $10^{th}$ grade and one (1) for $11^{th}$ grade. School type was coded as zero (0) for liberal high school students and one (1) for industrial school students. Family structure was coded as (1) living with biological father and mother, (2) living with father and step-mother, (3) living with mother and step-father, (4) living with father only, (5) living with mother only, and (6) living in other household arrangements without parents. Family income was measured by monthly household income from all sources. Parents' educational level was measured by schooling level completed by parents. Parental occupational level as reported by the respondents was coded as "unemployed" (1) to "professional workers" (8) for father and "housekeepers" (1) to "professional workers" (8) for mother, according to the Census Bureau's Index of Industries and Occupations (Bureau of the Census, Korea, 1996). Religious affiliation was coded as (1) for Buddhist, (2) for Protestant, (3) for Catholic, (4) for Other, and (5) for None. These socio-demographic questions were included in the instrument to provide a demographic description of the sample and as statistical control variables, in

addition to the variables measuring concepts from the three theoretical perspectives.

Social learning variables

Definitions. Following Akers's model, the concept of definitions was operationalized by four indicators. "Balance of positive-negative definition" was a single-item Likert measure of the degree to which the respondent's own attitudes, on balance, were approving or disapproving of using drugs. "Neutralizing definition" was a scale of three Likert items ($\alpha$=.52), asking "it is all right for people to use drugs as long as they control it," "teenagers who use drugs really shouldn't be held responsible since they are under too much pressure to resist," and "it is wrong to use drugs but it can be justified for some people or situations." Response scales were ranged from "strongly agree" (1) to "strongly disagree" (4). "Proscriptive definition" was a single item Likert measure, asking "it is wrong to use drugs." "Law abiding/violation definition" was a single item, asking the respondent's obedient or violating attitudes toward law in general.

Differential association. Differential association was measured by five indicators. The first is the perceived drug using behavior of close friends and the proportion (none or almost none, less than half, more than half, and almost all) of their close friend ($\alpha$=.76 on alcohol, $\alpha$=.77 on tobacco, $\alpha$=.82 on depressants, $\alpha$=.64 on stimulants, $\alpha$=.76 on tranquilizers, and $\alpha$=.65 on inhalants). Second and third were the perceived drug using behavior of father and mother. Response scales ranged from "never used" (1) to "everyday or nearly everyday"

(7). The fourth measure is the respondent's perception of close friends' norms on using drugs, asking "what is the attitude of your close friends toward using each of the substance?" The final was the respondent's perception of parents' norms on using drugs.

Differential reinforcement. Differential reinforcement was indexed by several measures. There are "friends' rewarding or punishing reactions" (respondents' reports of positive or negative sanctions by their friends to respondents' use of drugs, ranging from becoming closer friends to turning them into the authorities); "parents' rewarding or punishing reactions" (respondents' report of actual or anticipated positive or negative sanctions of parents for respondents' use of drugs, ranging from encouraging their use to turning them into the authorities).

The other measures of differential reinforcement to be used were "usual effects of use" (respondents' perception of positive and negative effects of drugs, ranging from "mainly good" to "mainly bad"); "formal deterrence" (respondents' perception of the probability that school teachers would catch "someone like yourself" using or possessing the legal and illegal drugs); and "overall balance of perceived rewards-costs of using drugs," which is seven item measures of the perceived benefits of using drugs balanced with seven item measures of the detrimental effects of using drugs.

Imitation. Imitation was measured first by an index of all the admired models, adults and peers, whom the respondent has observed using drugs. Imitation was operationalized by five items each of legal and illegal drugs, which

is the sum of all the admired models (on TV or in the movies; parents; others in family; same age peers; older peers or adults) whom respondents reported having "observed or watched" using the substance. Other measures of imitation, such as items asking about who was directly observed by the respondent using various substances, were used.

Social bonding variables

Attachment. Attachment was operationalized by five Likert scales measuring school attachment, parental attachment, peer attachment, parental supervision, and religious attachment. "School attachment" included two items on feelings toward school and the importance of good grades in school ($\alpha$=.34). "Parental attachment" was measured by a single item scale on affection and bonding between parent and student, asking "I feel very close to my parents", ranging from "strongly agree" (1) to "strongly disagree" (4). "Peer attachment" was also measured by a single item asking "I feel very close to my friends." "Parental supervision" was measured by a single item scale, asking whether their parents usually know where they are when they are away from home. "Religious attachment" was measured by a single item, asking how often they attend church or temple.

Commitment. Commitment had three measures; educational aspiration, occupational aspiration, and grade point average. "Educational aspiration" was measured by two items ($\alpha$=.40), asking how far they plan to go in school and how important it is to them that they achieve their scholastic goals. "Occupational

aspiration" was measured by a single item, asking how important it is to them that they obtain a well-paid, secure job following their graduation. The final measure of commitment was "grade point average."

Involvement. Involvement was measured by a single item, asking how much daily time the student spends on school work outside of class, ranging from "none at all" (1) to "over six hours" (6).

Belief. Belief was operationalized by three items (belief in legal norms, value of religion, and parental norms) designed to measure the respondent's attitudes toward obeying or respecting legal norms, value of religion, and parental norms.

Self-control variables

As noted earlier, six components of what Gottfredson and Hirschi call low self control were identified; impulsivity, preference for simple rather than complex tasks, risk seeking, preference for physical rather than cerebral activities, self-centered orientation, and volatile temper linked to a low tolerance for frustration. Each item asked respondents to judge themselves in terms of whether they possess a low self-control trait. All responses were given on 4-point scales of "strongly agree" (1), "agree" (2), "disagree" (3), and "strongly disagree" (4). Responses were recorded as necessary so that a low score indicated low self-control. To consider the effect of low self-control on drug use, this study examines the effect of the low self-control composite. This corresponds most closely to Gottfredson and Hirschi's conceptualization of self-control as a single

unidimensional latent construct, as well as the effects of six scales formed from the components. The results will indicate whether some components are more predictive of drug use than others and whether some may not be predictive at all.

## Statistical Methods

Descriptive statistics such as frequencies, percentages, and means are used to provide information on the characteristics of the respondents. Simple correlations among independent variables and dependent variables are carried out. Although most of the measures yield ordinal data, this study uses multiple regression techniques (see, Akers & Cochran, 1985). A series of multiple regression analyses are conducted, in which sets of variables (i.e., socio-demographic variables, social learning variables, social bonding variables, and self-control variables) are entered into the equation in several steps.

There are four steps to the multiple regressions in the analysis. First, the relations between variables derived from each theoretical model and four kinds of substance use (alcohol, tobacco, depressants, and stimulants) are assessed to test the hypotheses of the three theoretical models. Since there was virtually no use of tranquilizers, inhalants, marijuana, and other hard drugs, these drugs were excluded from the correlation analyses and multiple regression analyses. Second, to examine the relative explanatory power of variables from three theoretical models, all independent variables and socio-demographic variables are placed in regression equations, and then each of the theoretical variables and socio-demographic variables are eliminated from the full equation models.

Third, parental and peer variables derived from social learning and bonding theories are placed in separate and combined regression equations to examine the relative amounts of explained parental and peer variance. Finally, to examine the direct and indirect parental influences on substance use mediated by the peer association variable, path models are used. To use path models, peer association variables are first regressed on parental variables and then each type of substance use is regressed on parental variables again.

Standardized regression coefficients (Beta) are used in the regression models. The standardized regression coefficients permit comparison of the relative importance of variables that are measured in different units that can not be directly compared in a multiple regression analysis. As a means of measuring the combined effects of independent variables on the dependent variable, in the multiple regression analyses, the multiple coefficient of determination (R-square) are employed. Throughout these analyses, two-tailed tests are used to evaluate the credibility of hypotheses. The standard level of .05 is accepted for determining statistical significance.

# CHAPTER 4
# DATA ANALYSIS AND FINDINGS: TESTING SOCIAL LEARNING, SOCIAL BONDING, AND SELF-CONTROL THEORIES

The purpose of this chapter is to report analyses and findings on the relation between the elements of the three theoretical models and substance use by the Korean adolescents. Five analyses will be presented: (1) descriptive statistics on the characteristics of the Korean adolescents using substances; (2) comparison of the Korean adolescents according to school type utilizing frequencies, percentages, and chi-squares; (3) comparisons of school type, gender, and age according to using drugs through analyses of percentage, means, and t-tests; (4) correlations of socio-demographic variables and variables from social learning, social bonding, and self-control theories with adolescent substance use; (5) a series of OLS multiple regression analyses for testing hypotheses and exploring the relative effects of independent variables on substance use.

In this first part descriptive data are presented to understand the characteristics of the Korean adolescents and to provide a basic framework for the demonstration and interpretation of results in this study.

## Socio-Demographic Characteristics of Korean Adolescents

As indicated in Table 4-1, 52% of respondents were male (N=529) and 48% were female (483). Fifty-one percent were 10$^{th}$ grade student (N=511) and

49% were 11th grade students (501). With regard to school type of respondents, 52.6 percent were liberal high school students (n=532) and 47.4 percent were industrial high school students (480). In terms of family structure, 89.1 percent of respondents were lived with two biological parents (n=902); 0.8 percent were with father and stepmother (8); 0.4 percent were with mother and stepfather (4); 2.9 percent were with biological father only (29); 5.4 percent were with biological mother only; and 1.4 percent were without both parents (14).

Family income[1] per month was coded as (1) less than $ 420 to (6) more than $2,500. The mean family income per month of respondents was approximately $1,500. Father's and mother's occupation were measured on an eight-point scale ranging from "unemployed" or "housekeeper" to "professional workers." About two in five (22.6 %) of respondents' fathers were "unskilled laborers, service workers, practical workers, and other" (N=213) and 22.6% were officials (213).

With regard to mother's occupation, more than half of them were housekeepers (N=561) and 17.5% were "unskilled laborers, service workers, practical workers, and other" (169). The measure of parents' education is a level of school completed by them. This variable is coded into six categories ranging from "none" to "graduate university." The mean educational level for fathers and mothers was high school. Generally, respondents' fathers (M=3.77) were more educated than their mothers (M=3.50).

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[1] One American Dollar is equal to 1,200 Korean Won. This index was originally coded as (1) less than 500,000 Won to (6) more than 3,000,000 Won in survey instruments.

Table 4-1: Socio-Demographic Characteristics of Korean Adolescents

| Variables | Frequency (N) | Percent (%) | Range | Mean |
|---|---|---|---|---|
| **Gender**: | **1012** | **100** | **0,1** | |
| Male | 529 | 52.3 | | |
| Female | 483 | 47.7 | | |
| **Grade**: | **1012** | **100** | **0,1** | |
| $10^{th}$ | 511 | 50.5 | | |
| $11^{th}$ | 501 | 49.5 | | |
| **School Type** | **1012** | **100** | **0,1** | |
| Liberal High School | 532 | 52.6 | | |
| Industrial High School | 480 | 47.4 | | |
| **Family Structure**: | **1012** | **100** | **1~6** | |
| Biological Father and Mother | 902 | 89.1 | | |
| Father and Step-Mother | 8 | 0.8 | | |
| Mother and Step-Father | 4 | 0.4 | | |
| Father only | 29 | 2.9 | | |
| Mother only | 55 | 5.4 | | |
| Without parents | 14 | 1.4 | | |
| **Family Income**: | **1012** | **100** | **1~6** | **3.46** |
| Less than $ 420 | 77 | 7.6 | | |
| $ 420 ~ $ 840 | 172 | 17.0 | | |
| $ 841 ~ $1,250 | 281 | 27.8 | | |
| $1,251 ~ $1,700 | 249 | 24.6 | | |
| $1,701 ~ $2,500 | 158 | 15.6 | | |
| More than $2,500 | 75 | 7.4 | | |
| **Father's Occupation**: | **943** | **100** | **1~8** | |
| Unemployed | 65 | 6.9 | | |
| Manufacturing, farming, fishing, mining (unskilled-laborers, service workers, practical worker, waiters, laborers, other) | 213 | 22.6 | | |
| Manufacturing, farming, fishing, mining (semi-skilled workers, salesmen, operatives, other) | 38 | 4.0 | | |
| Manufacturing, farming, fishing, mining (skilled-workers, retail owners, craftsmen, foremen, other) | 188 | 19.9 | | |
| Officials (salaried men, bank clerks, officials, other) | 213 | 22.6 | | |
| Technical workers (engineers, architects, teachers, nurses, other) | 132 | 14.0 | | |
| Managers (department heads, proprietors, Federal and local public administrations, other) | 67 | 7.1 | | |
| Professional workers (doctors, lawyers, professors, researchers, authors, editors, reporters, etc) | 27 | 2.9 | | |

Table 4-1 -- Continued

| Variables | Frequency (N) | Percent (%) | Range | Mean |
|---|---|---|---|---|
| **Mother's Occupation**: | **968** | **100** | **1~8** | |
| Housekeepers | 561 | 58.0 | | |
| Manufacturing, farming, fishing, mining (unskilled-laborers, service workers, practical worker, waitress, laborers, other) | 169 | 17.5 | | |
| Manufacturing, farming, fishing, mining (semi-skilled workers, salesmen, operatives, other) | 40 | 4.1 | | |
| Manufacturing, farming, fishing, mining (skilled-workers, retail owners, craftsmen, foremen, other) | 108 | 11.2 | | |
| Officials (salaried men, bank clerks, officials, other) | 44 | 4.5 | | |
| Technical workers (engineers, architects, teachers, nurses, other) | 18 | 1.9 | | |
| Managers (department heads, proprietors, federal and local public administrations, other) | 18 | 1.9 | | |
| Professional workers (doctors, lawyers, professors, researchers, authors, editors, reporters, other) | 10 | 1.0 | | |
| **Father's Education**: | **943** | **100** | **1~6** | **3.77** |
| None | 26 | 2.8 | | |
| Elementary school | 101 | 10.7 | | |
| Middle school | 185 | 19.6 | | |
| High school | 423 | 44.9 | | |
| College or University | 176 | 18.7 | | |
| Graduate university | 32 | 3.4 | | |
| **Mother's Education**: | **969** | **100** | **1~6** | **3.50** |
| None | 26 | 2.7 | | |
| Elementary school | 122 | 12.6 | | |
| Middle school | 263 | 27.2 | | |
| High school | 461 | 47.5 | | |
| College or University | 90 | 9.3 | | |
| Graduate university | 7 | 0.7 | | |
| **Religious Affiliation**: | **1012** | **100** | **1~5** | |
| Buddhist | 408 | 40.3 | | |
| Protestant | 195 | 19.3 | | |
| Catholic | 58 | 5.7 | | |
| Other | 14 | 1.4 | | |
| None | 337 | 33.3 | | |

In terms of adolescents' religion, 40.3 percent of respondents were Buddhist (n=408), 19.3% Protestant (195), 5.7% Catholic (58), 1.4% other religions (14), and 33.3% no religious affiliation (337).

Comparisons of School Type

As shown in Table 4-2, of the 1,012 Korean adolescents, 532 (52.6%) were sampled in liberal high schools and 480 (47.4%) in industrial high schools.

Analyses of frequencies, percentages, means and Chi-Square tests for the selected variables from the two samples made possible a comparison between them. These two groups are different in terms of their socio-demographic characteristics. Compared with industrial high school students, greater proportions of liberal high school students lived with both of their biological parents (85.6% vs. 92.3%, $\chi 2=17.5$, $p< .01$).

Liberal students have more family income than industrial students have ($\chi 2=97.9$, $p< .001$). Among liberal school students, 31.8% of liberal students have more than $1,750 per month as family income, while 13.4% of industrial students have that amount of money per month. Parents sampled in liberal schools were significantly more likely to have high ranked occupation in Korean society than those in industrial schools ($\chi 2=69.4$, $p< .001$ for father occupation; $\chi 2=45.4$, $p< .001$ for mother occupation). For example, 31.4% of father and 24.7% of mother in industrial schools have unskilled, practical, or service workers compared to 14.9% and 11.3% in liberal schools.

Table 4-2: Characteristics of Korean Adolescents According to School Type

| Variables | Sampling Frames (%) Liberal High School (N=532) (52.6%) | Industrial High School (N=480) (47.4%) | Chi-squares |
|---|---|---|---|
| **Family Structure**: | | | 17.46** |
| Father and Mother | 491 (92.3%) | 411 (85.6%) | |
| Father and Step-Mother | 4 ( 0.8 ) | 4 ( 0.8 ) | |
| Mother and Step-Father | 2 ( 0.4 ) | 2 ( 0.4 ) | |
| Father only | 5 ( 1.1 ) | 23 ( 4.8 ) | |
| Mother only | 25 ( 4.7 ) | 30 ( 6.3 ) | |
| Without Parents | 4 ( 0.8 ) | 10 ( 2.1 ) | |
| **Family Income**: | | | 97.88*** |
| Less than $420 | 20 ( 3.8%) | 57 (11.9%) | |
| $420 ~ $840 | 54 (10.2 ) | 118 (24.6 ) | |
| $840 ~ $1,250 | 138 (25.9 ) | 143 (29.8 ) | |
| $1,250 ~ $1,700 | 151 (28.4 ) | 98 (20.4 ) | |
| $1,700 ~ $2,500 | 115 (21.6 ) | 43 ( 9.0 ) | |
| More than $2,500 | 54 (10.2 ) | 21 ( 4.4 ) | |
| **Father's Occupation**: | | | 69.43*** |
| Unemployed | 27 ( 5.4%) | 38 ( 8.6%) | |
| Unskilled laborers | 75 (14.9 ) | 138 (31.4 ) | |
| Semi-skilled workers | 17 ( 3.4 ) | 21 ( 4.8 ) | |
| Skilled workers | 99 (19.7 ) | 89 (20.2 ) | |
| Officials | 141 (28.0 ) | 72 (16.4 ) | |
| Technical workers | 71 (14.1 ) | 61 (13.9 ) | |
| Managers | 52 (10.3 ) | 15 ( 3.4 ) | |
| Professional workers | 21 ( 4.2 ) | 6 ( 1.4 ) | |
| **Mother's Occupation**: | | | 45.37*** |
| Housekeeper | 321 (61.5%) | 240 (53.8%) | |
| Unskilled laborers | 59 (11.3 ) | 110 (24.7 ) | |
| Semi-skilled workers | 22 ( 4.2 ) | 18 ( 4.0 ) | |
| Skilled workers | 54 (10.3 ) | 54 (12.1 ) | |
| Officials | 29 ( 5.6 ) | 15 ( 3.4 ) | |
| Technical workers | 14 ( 2.7 ) | 4 ( 0.9 ) | |
| Managers | 13 ( 2.5 ) | 5 ( 1.1 ) | |
| Professional workers | 10 ( 1.9 ) | ---- ( ---- ) | |

* p< .05
** p< .01
*** p< .001 (two-tailed test)

Table 4-2 -- Continued

| Variables | Sampling Frames (%) Liberal High School (N=532) (52.6%) | Industrial High School (N=480) (47.4%) | Chi-squares |
|---|---|---|---|
| **Father's Education**: | | | 141.87*** |
| None | 5 ( 1.0%) | 21 ( 4.8%) | |
| Elementary school | 32 ( 6.4 ) | 69 (15.7 ) | |
| Middle school | 63 (12.5 ) | 122 (27.7 ) | |
| High school | 227 (45.1 ) | 196 (44.5 ) | |
| College or university | 146 (29.0 ) | 30 ( 6.8 ) | |
| Graduate university | 30 ( 6.0 ) | 2 ( 0.5 ) | |
| **Mother's Education**: | | | 115.92*** |
| None | 5 ( 1.0%) | 21 ( 4.7%) | |
| Elementary school | 44 ( 8.4 ) | 78 (17.4 ) | |
| Middle school | 97 (18.6 ) | 166 (37.1 ) | |
| High school | 293 (56.1 ) | 168 (37.6 ) | |
| College or university | 76 (14.6 ) | 14 ( 3.1 ) | |
| Graduate university | 7 ( 1.3 ) | ---- ( ---- ) | |
| **Religious Affiliation**: | | | 27.79*** |
| Buddhist | 187 (35.2%) | 221 (46.0%) | |
| Protestant | 102 (19.2 ) | 93 (19.4 ) | |
| Catholic | 47 ( 8.8 ) | 11 ( 2.3 ) | |
| Other | 8 ( 1.5 ) | 6 ( 1.3 ) | |
| None | 188 (35.3 ) | 149 (31.0 ) | |

* p< .05
** p< .01
*** p< .001 (two-tailed test)

Parents sampled in industrial schools were also significantly less likely to have education those in liberal schools ($\chi 2$=141.9, p< .001 for father education; $\chi 2$=115.9, p< .001 for mother education). 6.8% of father and 3.1% of mother in industrial schools graduated college or university compared to 29% of father and

14.6% of mother in liberal schools. In relation to religious affiliation, 46% of industrial students were Buddhist compared to 35.2% of liberal students. 8.8% of liberal students were Catholics compared to 2.3% of industrial students. These two groups were also significantly different from their religious affiliation ($\chi 2$=27.8, p< .001).

As noted, a greater proportion of liberal students lived with their biological parents than industrial students. Greater proportion of parents sampled in liberal schools have more high-ranked occupations, family income, and education than those in industrial schools. Thus, these two groups are significantly different in terms of their socio-demographic characteristics.

The Distribution of Substance Use in the Sample

The data in Table 4-3 are the distribution of the frequency of self-reported Korean adolescents' substance use in the past year. As can be seen from table 4-3, the majority of respondents (76.6%) have used alcohol in the past year. Compared with a recent national survey in Korea (KADCC, 1997), the prevalence of alcohol in the sample was slightly higher (73.6% vs. 76.6%). Of the 76.6% of who use alcohol, 11.7% of respondents were monthly drinkers, 7.5% were weekly, and only 0.7% reported daily drinking.

More than a third of the respondents (37.4%) have tried smoking in the past year and 18.6% were daily smokers, slightly higher than the proportion of smokers in a recent national survey (36.4%) in Korea (see KADCC, 1997). Two out of five (40.4%) respondents reported use of depressants. Of the depressant

users, less than half of them (17.9%) reported using them once or twice in the past year. However, it is remarkable that depressant use by adolescents is extremely higher than marijuana use (0.1%) and even than tobacco use (37.4%) in Korea compared with depressant use in the United States (See, National Household Survey on Drug Abuse Main Findings, 1996). This may result from the easier availability of depressants in Korean society; they can be purchased without doctors' prescriptions in drug stores.

The vast majority of respondents did not report any use of stimulants, tranquilizers, inhalants, or marijuana. No one in the study used LSD, philophone, cocaine, or narcotics in the past year. Besides the absence of use of these more potent drugs, the most notable difference between these Korean adolescents and American youth is that there is essentially no marijuana use (0.1%) among them while one fifth of adolescents in the United States (20.9%) have smoked marijuana in the past year (National Household Survey on Drug Abuse Main Findings, 1996). The lifetime distribution of frequency of substance use by Korean adolescents is shown in Appendix B.

Table 4-4 shows the distributions of first use of each of drug in their lifetime. Twenty-three percent of respondents began using alcohol at the $8^{th}$ grade (14 years old); 15.5% began using tobacco at the $8^{th}$ grade; and 27.4% began using depressants before $7^{th}$ grade (13 years old). It is also noted that Korean adolescents, unlike American youth, normally used depressants earlier than alcohol and tobacco.

Table 4-3: Descriptive Statistics on Substance Use by Adolescents in the Past Year

| Variables | (1) Never | (2) Once or twice | (3) Several times | (4) Occasionally, less than once a month | (5) Monthly, once or twice a month | (6) Weekly, at least once a week, but not everyday | (7) Daily, Everyday or nearly everyday | Mean |
|---|---|---|---|---|---|---|---|---|
| Alcohol | 23.4 | 27.4 | 14.5 | 11.7 | 14.9 | 7.5 | 0.6 | 2.92 |
| Tobacco | 62.6 | 6.5 | 3.7 | 1.6 | 1.8 | 5.2 | 18.6 | 2.63 |
| Depressants | 59.6 | 17.9 | 8.3 | 9.1 | 4.5 | 0.6 | --- | 1.83 |
| Stimulants | 97.2 | 2.1 | 0.2 | 0.5 | --- | --- | --- | 1.04 |
| Tranquilizers | 98.1 | 1.3 | 0.2 | 0.3 | 0.1 | --- | --- | 1.03 |
| Inhalants | 99.1 | 0.7 | 0.2 | --- | --- | --- | --- | 1.01 |
| Marijuana | 99.9 | 0.1 | --- | --- | --- | --- | --- | 1.00 |
| Other Drugs | 100.0 | --- | --- | --- | --- | --- | --- | 1.00 |

Table 4-4: Descriptive Statistics on Grade Level of First Time Substance Use by Korean Adolescents (%)

| | (1) Never | (2) Before 7th | (3) 7th | (4) 8th | (5) 9th | (6) 10th | (7) 11th | Mean |
|---|---|---|---|---|---|---|---|---|
| Alcohol | 15.7 | 16.3 | 10.5 | 22.8 | 17.9 | 14.8 | 2.2 | 3.64 |
| Tobacco | 53.8 | 7.6 | 6.3 | 15.5 | 11.0 | 5.0 | 0.8 | 2.41 |
| Depressants | 45.0 | 27.4 | 10.3 | 7.4 | 5.6 | 3.8 | 0.6 | 2.15 |
| Stimulants | 95.6 | 1.0 | 0.9 | 1.1 | 0.9 | 0.6 | --- | 1.13 |
| Tranquilizers | 97.4 | 0.8 | 0.2 | 0.3 | 0.5 | 0.8 | --- | 1.08 |
| Inhalants | 98.3 | --- | 0.1 | 0.7 | 0.6 | 0.3 | --- | 1.06 |
| Marijuana | 99.8 | --- | 0.1 | --- | 0.1 | --- | --- | 1.01 |
| Other Drugs | 100.0 | --- | --- | --- | --- | --- | --- | 1.00 |

Drug Use by School Type

A comparison of school type for using drugs in the past year is drawn through analyses of percentages, means, and t-tests in Table 4-5. The sample is divided into two groups: 532 liberal high school students and 480 industrial high school students. Two groups are significantly different in terms of using drugs, except using depressants. Compared with the liberal school students, greater proportions of the industrial school students used each of the drugs.

The t-test results indicate the significant differences in using alcohol ($t=-22.32$, $p< .001$), tobacco ($t=-12.34$, $p< .001$), stimulants ($t=27.39$, $p< .001$), tranquilizers ($t=27.93$, $p< .001$), inhalants ($t=29.32$, $p< .001$), and marijuana

(t=30.02, p< .001). However, the difference in using depressants is not significant at p< .05 level. With regard to alcohol, although industrial school students (49.0%) are less likely to use alcohol occasionally than liberal school students (57.7%), they are more likely to use it monthly, weekly, and daily (20.8% vs. 9.6%; 12.5% vs. 3.0%; and 1.0% vs. 0.2%, respectively). This study clearly shows that greater proportions of industrial school students are heavy drinkers. Industrial school students are also much more likely to use tobacco than liberal school students (53.1% vs. 23.1%) and much more likely to use it daily (31.7% vs. 6.8%). Industrial school students are more likely to use depressants than liberal school students (43.5% vs. 37.6%), but the difference is not significant.

In summary, as indicated in the comparison of two groups on socio-demographic characteristics, the comparison of two groups on substance use revealed that industrial high school students were more likely to use substances. The proportions of using drugs should be correlated to socio-demographic characteristics between two groups.

Comparison of Gender and Age

As indicated in table 4-6 and 4-7, gender and age differences are significantly associated with all of the substance use except for depressant use. In general, male and 11$^{th}$ grade students are more likely to use drugs than female and 10$^{th}$ grade students are. However, females are more likely to use depressants, stimulants, and tranquilizers than males are (52.2% vs. 29.7%; 3.9% vs. 1.7%; and 2.7% vs. 1.1%, respectively). For example, female use of

depressants (52.2%) doubles that of male use (29.7%). This result is consistent with the previous studies in Korea (See, Korean Youth Association, 1996; Park, 1996; Kim & Park, 1995).

## Correlation Analyses

The bivariate correlation coefficients of all independent variables for each substance use are shown in Tables 4-8 and 4-9. The findings will be discussed concerning the relation of independent variables such as socio-demographic variables, social learning, social bonding, and self-control variables to the dependent variables such as alcohol, tobacco, depressant, and stimulant use. The use of tranquilizers, inhalants, and marijuana will be excluded from these correlation analyses because of too small amounts of frequencies (1.5%, 0.6%, and 0.2%, respectively). The zero-order correlation coefficients for all independent variables for alcohol use are shown in Appendix C. The zero-order matrices for alcohol, depressant, stimulant use (not presented here) are similar to those for alcohol use. From Appendix C, it can be seen that the intercorrelations among the independent variables are not of sufficient magnitude that multicollinearity should be a problem, either within theoretical models or in combined models when placed in the same equation. The bivariate correlation analyses will anticipate the findings in the multivariate analyses which will be conducted in the next step.

Table 4-5: Substance Use by Korean Adolescent in the Liberal High Schools and Industrial High Schools

| | Liberal High School Students (%) | | | | | | Industrial High School Students (%) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (0) Never, | (1) Occasionally, Up to less than once a month | (2) Monthly, Once or twice a month | (3) Weekly, at least once a week | (4) Daily, Everyday or nearly everyday | Mean | (0) Never, | (1) Occasionally, Up to less than once a month | (2) Monthly, Once or twice a month | (3) Weekly, at least once a week | (4) Daily, Everyday or nearly everyday | Mean | t-value |
| Alcohol | 29.5 | 57.7 | 9.6 | 3.0 | 0.2 | 0.87 | 16.7 | 49.0 | 20.8 | 12.5 | 1.0 | 1.33 | -22.32*** |
| Tobacco | 76.9 | 10.5 | 1.5 | 4.3 | 6.8 | 0.54 | 46.9 | 13.1 | 2.1 | 6.3 | 31.7 | 1.63 | -12.34*** |
| Depressants | 62.4 | 31.8 | 5.1 | 0.8 | --- | 0.44 | 56.5 | 39.2 | 4.0 | 0.4 | --- | 0.48 | 0.53 |
| Stimulants | 97.9 | 2.1 | --- | --- | --- | 0.02 | 96.5 | 3.5 | --- | --- | --- | 0.04 | 27.39*** |
| Tranquilizers | 98.5 | 1.3 | 0.2 | --- | --- | 0.02 | 97.7 | 2.3 | --- | --- | --- | 0.02 | 27.93*** |
| Inhalants | 99.4 | 0.6 | --- | --- | --- | 0.01 | 98.8 | 1.3 | --- | --- | --- | 0.01 | 29.32*** |
| Marijuana | 99.8 | 0.2 | --- | --- | --- | 0.00 | 100.0 | --- | --- | --- | --- | 0.00 | 30.02*** |
| Other Drugs | 100.0 | --- | --- | --- | --- | 0.00 | 100.0 | --- | --- | --- | --- | 0.00 | --- |

* p< .05
** p< .01
*** p< .001

Table 4-6: Descriptive Statistics on Substance Use Between Male and Female

| | Male (%) | | | | | | Female (%) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (0) Never, | (1) Occasionally, Up to less than once a month | (2) Monthly, Once or twice a month | (3) Weekly, at least once a week | (4) Daily, Everyday or nearly everyday | Mean | (0) Never, | (1) Occasionally, Up to less than once a month | (2) Monthly, Once or twice a month | (3) Weekly, at least once a week | (4) Daily, Everyday or nearly everyday | Mean | t-value |
| Alcohol | 19.5 | 52.2 | 16.6 | 11.0 | 0.8 | 1.21 | 27.7 | 55.1 | 13.0 | 3.7 | 0.4 | 0.94 | -19.40*** |
| Tobacco | 51.2 | 13.0 | 2.1 | 5.5 | 28.2 | 1.46 | 75.2 | 10.4 | 1.4 | 5.0 | 8.1 | 0.61 | -11.02*** |
| Depressants | 70.3 | 26.8 | 2.3 | 0.6 | --- | 0.33 | 47.8 | 44.5 | 7.0 | 0.6 | --- | 0.61 | 2.23* |
| Stimulants | 98.3 | 1.7 | --- | --- | --- | 0.02 | 96.1 | 3.9 | --- | --- | --- | 0.04 | 29.36*** |
| Tranquilizers | 98.9 | 0.9 | 0.2 | --- | --- | 0.01 | 97.3 | 2.7 | --- | --- | --- | 0.03 | 30.35*** |
| Inhalants | 99.2 | 0.8 | --- | --- | --- | 0.01 | 99.0 | 1.0 | --- | --- | --- | 0.01 | 32.06*** |
| Marijuana | 99.8 | 0.2 | --- | --- | --- | 0.00 | 100.0 | --- | --- | --- | --- | 0.00 | 32.21*** |
| Other Drugs | 100.0 | --- | --- | --- | --- | 0.00 | 100.0 | --- | --- | --- | --- | 0.00 | --- |

* p< .05
** p< .01
*** p< .001

Table 4-7: Descriptive Statistics on Substance Use Between 10th Grade Students and 11th Grade Students

| | 10th Grade (%) | | | | | | 11th Grade (%) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (0) Never, | (1) Occasionally, Up to less than once a month | (2) Monthly, Once or twice a month | (3) Weekly, at least once a week | (4) Daily, Everyday or nearly everyday | Mean | (0) Never, | (1) Occasionally, Up to less than once a month | (2) Monthly, Once or twice a month | (3) Weekly, at least once a week | (4) Daily, Everyday or nearly everyday | Mean | t-value |
| Alcohol | 26.4 | 53.6 | 11.9 | 7.2 | 0.8 | 1.02 | 20.4 | 53.5 | 18.0 | 7.8 | 0.4 | 1.14 | -19.49*** |
| Tobacco | 66.7 | 11.9 | 1.6 | 6.1 | 13.7 | 0.88 | 58.5 | 11.6 | 2.0 | 4.4 | 23.6 | 1.23 | -11.01*** |
| Depressants | 62.0 | 33.1 | 4.7 | 0.2 | --- | 0.43 | 57.1 | 37.5 | 4.4 | 1.0 | --- | 0.49 | 1.39 |
| Stimulants | 97.7 | 2.3 | --- | --- | --- | 0.02 | 96.8 | 3.2 | --- | --- | --- | 0.03 | 28.46*** |
| Tranquilizers | 98.4 | 1.4 | 0.2 | --- | --- | 0.02 | 97.8 | 2.2 | --- | --- | --- | 0.02 | 29.13*** |
| Inhalants | 99.8 | 0.2 | --- | --- | --- | 0.00 | 98.4 | 1.6 | --- | --- | --- | 0.02 | 30.81*** |
| Marijuana | 99.8 | 0.2 | --- | --- | --- | 0.00 | 100.0 | --- | --- | --- | --- | 0.00 | 31.30*** |
| Other Drugs | 100.0 | --- | --- | --- | --- | 0.00 | 100.0 | --- | --- | --- | --- | 0.00 | --- |

* p< .05
** p< .01
*** p< .001

Table 4-8: Bivariate Correlation Coefficients of Socio-Demographic Variables for Each Substance Category

| Variable | Alcohol | Tobacco | Depressants | Stimulants |
|---|---|---|---|---|
| **Gender** | .18*** | .26*** | -.23*** | -.05 |
| **Grade Level** | .10** | .11*** | .04 | .04 |
| **School Type** | .29*** | .35*** | .03 | .05 |
| **Family Structure**: (Living with) | | | | |
| parents | -.05 | -.08* | .05 | .02 |
| father and step-mother | .06 | .06 | -.02 | -.01 |
| mother and step-father | .08* | .04 | .01 | .05 |
| father only | .03 | .04 | .01 | .02 |
| mother only | .00 | .05 | -.06 | -.04 |
| no parents | .00 | .01 | -.03 | -.02 |
| **Family Income** | .06* | -.01 | .10** | .02 |
| **Parents' Occupation** | .00 | -.04 | .02 | .00 |
| **Parents' Education** | -.06* | -.11*** | .01 | -.01 |
| **Religious Affiliation**: | | | | |
| Buddhist | .02 | .01 | .02 | -.02 |
| Protestant | -.05 | -.01 | -.02 | .04 |
| Catholic | .03 | -.01 | -.04 | -.02 |
| Others | .04 | .01 | .00 | -.02 |
| No Religion | .00 | .00 | .02 | .00 |

* p< .05
** p< .01
*** p< .001

Socio-Demographic Variables

Table 4-8 presents the bivariate correlation coefficients of socio-demographic variables for each substance use. Alcohol and tobacco use are correlated to gender, grade level, school type, family income, parents' occupation and parents' education; the correlations are statistically significant, with the magnitude of the relationships ranging from weak (r=.06) to moderate (r=.35). However, family structure and religious affiliation are not associated with alcohol and tobacco use. Two socio-demographic variables such as gender and family income are significantly correlated with the depressant use, but any other socio-demographic variables are not significantly associated with stimulant use. These findings are consistent with the previous findings that the t-tests of gender, grade level and school type are statistically significant with each substance use shown in Table 4-5, 4-6, and 4-7.

Social Learning, Social Bonding, and Self-Control Variables

Table 4-9 presents the bivariate correlation coefficients of social learning, social bonding, and self-control variables for each substance use. In general, the strongest relationships are found between the social learning variables and each substance use with coefficients ranging as high as .78. However, some of the coefficients are weak ranging as low as .01. Differential peer association has the strongest correlation with each substance use, ranging from .59 to .78. With regard to alcohol use, all of social learning variables are significant, ranging from .13 to .70 with exception of formal deterrence. Social bonding variables range

from .05 to .28 and self-control variables also are moderately correlated with alcohol use, ranging from .05 to .28.

Also, all of the social learning variables are significantly associated with tobacco use, ranging from .07 to .78. However, half of the social bonding variables are not significantly correlated with tobacco use and self-control variables are moderately, but significantly related to substance use, with bivariate correlation coefficients between .07 and .24.

In relation to depressant use, most of social learning variables are strongly correlated with them with coefficients ranging from .08 to .64. None of social bonding variables and self-control variables, however, significantly correlated with depressant use. Finally, most of social learning variables are significantly associated and self-control variables are moderate correlated, but the only social bonding variables correlated with stimulant use is educational involvement.

Consistent with previous substance use research (See, Benda, 1994; Akers and Cochran, 1985), substance use is mostly highly correlated with differential peer association in this correlation analyses. Most of the social learning variables have significant relationships to the dependent variables. Social bonding and self-control variables have weak to moderate relationships with the dependent variables.

Table 4-9: Bivariate Correlation Coefficients of Social Learning, Social Bonding, and Self-Control Variables for Each Substance Category

| Variable | Alcohol | Tobacco | Depressants | Stimulants |
|---|---|---|---|---|
| **SOCIAL LEARNING** | | | | |
| Definitions | | | | |
| positive/negative definitions | .30*** | .48*** | .38*** | .13*** |
| proscriptive definitions | -.16*** | -.11** | -.05 | -.04 |
| law abiding/violating definitions | -.13*** | -.07* | -.01 | -.03 |
| neutralizing definitions | .22*** | .19*** | .05 | .05 |
| Differential Association | | | | |
| differential peer association | .70*** | .78*** | .64*** | .59*** |
| father's use | .16*** | .13*** | .34*** | .25*** |
| mother's use | .15*** | .13*** | .44*** | .16*** |
| peer norm qualities | .40*** | .51*** | .37*** | .15*** |
| parents' norm qualities | .09** | .10** | .36*** | .04 |
| Differential Reinforcement | | | | |
| parents' reaction | .22*** | .41*** | .29*** | .08** |
| friends' reaction | .34*** | .45*** | .25*** | .07* |
| usual effects of use | .39*** | .54*** | .38*** | .08** |
| formal deterrence | -.03 | -.11** | .01 | -.03 |
| rewards-costs of use | .40*** | .45*** | .28*** | .14*** |
| Imitation | | | | |
| peers | .45*** | .50*** | .10** | .12*** |
| parents | .48*** | .52*** | .10** | .09** |
| other adults | .47*** | .51** | .10** | .14*** |
| advertisements | .47*** | .51** | .08** | .13*** |

* p< .05
** p< .01
*** p< .001

Table 4-9 -- Continued

| Variable | Alcohol | Tobacco | Depressants | Stimulants |
|---|---|---|---|---|
| **SOCIAL BONDING** | | | | |
| Attachment | | | | |
| school attachment | -.18*** | -.20*** | -.05 | .01 |
| parental attachment | -.14*** | -.17*** | -.02 | -.04 |
| peer attachment | .05 | .02 | .00 | -.02 |
| parental supervision | -.20*** | -.20*** | -.01 | -.05 |
| religious attachment | -.06 | -.04 | .02 | .02 |
| Commitment | | | | |
| educational aspirations | -.25*** | -.30*** | .02 | -.02 |
| occupational aspirations | -.06 | -.04 | .01 | -.03 |
| grade point average | -.20*** | -.27*** | .01 | .00 |
| Involvement | | | | |
| educational involvement | -.28*** | -.32*** | .00 | -.06* |
| Belief | | | | |
| legal norms | -.10** | -.05 | -.02 | .00 |
| value of religion | -.07* | -.05 | .02 | -.02 |
| parental norms | -.10** | -.04 | -.02 | -.03 |
| **SELF-CONTROL** | | | | |
| impulsivity | .22*** | .21*** | .03 | .08* |
| preference for simple tasks | .05 | .09** | .01 | -.04 |
| risk seeking | .28*** | .25*** | .05 | .11*** |
| preference for physical activities | .24*** | .23*** | -.04 | .09** |
| self-centered | .05 | .07* | .01 | -.06* |
| low tolerance | .16*** | .24*** | .03 | -.01 |

* p< .05
** p< .01
*** p< .001

## Multiple Regression Analyses

The primary purpose of this study was to test the propositions of three major theories of deviance to determine how well they do separately and in comparison to one another in explaining substance use by the Korean adolescents. In this section, each type of substance use will be regressed on three separate models derived from social learning, social bonding, and self-control. This analysis provides the relative predictive value of single variables and the total amount of variance explained by each theoretical model.

### Social Learning Models

Table 4-10 displays the results of ordinary least squares (OLS) models of each substance use regressed on measures of the four main social learning factors; definitions, differential association, differential reinforcement, and imitations. Table 4-10 indicates that in all models the social learning theory is supported as an explanation of substance use. The social learning model explains 58% of the variance in alcohol use, 67% of tobacco use, 47% of depressant use and 42% of stimulant use. The differential peer association variable by far has the strongest net effects on alcohol (B=.508), tobacco (.541), depressant (.528), and stimulant use (.570). In addition, measures of differential reinforcement have significant net effects on tobacco use, and measures of definitions and imitations have significant net effects on tobacco use.

Table 4-10: OLS Regression of Substance Use on Social Learning Variables

| Variable | Alcohol | Tobacco | Depressants | Stimulants |
|---|---|---|---|---|
| Definition | | | | |
| positive/negative definitions | .032 | .055* | .049 | -.029 |
| proscriptive definitions | .003 | .044* | -.003 | .030 |
| law abiding/violating definitions | -.024 | -.022 | .013 | -.009 |
| neutralizing definitions | -.009 | -.029 | -.025 | -.046 |
| Differential Association | | | | |
| differential peer association | .508*** | .541*** | .528*** | .570*** |
| father's use | .058* | .018 | .047 | .165*** |
| mother's use | .007 | .006 | .128*** | .074** |
| peer norm qualities | .047 | .054* | -.023 | .079 |
| parents' norm qualities | -.045 | -.026 | -.011 | .080* |
| Differential Reinforcement | | | | |
| parents' reaction | .042 | .132*** | -.034 | .002 |
| friends' reaction | .065** | -.010 | .035 | .027 |
| usual effects of use | .075** | .109*** | .061 | .008 |
| formal deterrence | -.021 | -.024 | .033 | -.046 |
| rewards-costs of use | .056* | .058* | .042 | .014 |
| Imitation | | | | |
| peers | .024 | .012 | -.024 | .058 |
| parents | .076 | .086* | -.018 | -.098 |
| other adults | .069 | -.016 | .114 | .128 |
| advertisements | .050 | .057 | -.037 | -.034 |
| $R^2$ | .576 | .669 | .472 | .420 |
| N | 904 | 889 | 880 | 880 |

* p< .05
** p< .01
*** p< .001

Generally, (1) positive/negative and proscriptive definitions from definition category have significant association with tobacco; (2) differential peer association variable has significant association with all of dependent variables; (3) father's and mother's use have significant effects on alcohol, depressant, and stimulant use and peer norm and parents' norm qualities are associated with tobacco and stimulant use, respectively; (4) most of variables from the differential reinforcement category such as peer and parents' reactions, usual effects, and rewards-costs of use have significant association with alcohol and tobacco use; and (5) imitation of parents is significantly related to tobacco use. Among the four basic concepts of social learning theory, imitation variables have the weakest effects in the Korean adolescent data. This result is consistent with findings in American research (Akers et al., 1979). This may be the result of the way in which imitation has been measured and may need to be modified in future research (Akers, 1998).

Social Bonding and Self-Control Models

Table 4-11 presents the results of OLS models of each substance use regressed on the social bonding and self-control variables separately. Social bonding theory would hypothesize that strong social bonds, in the form of attachment to family, school, and peer, commitment to conformity, involvement with conventional activities, and belief in societal norms, should result in a lower level of substance use. Thus, if the beta coefficients are negative, the findings are consistent with the hypotheses.

Table 4-11: OLS Regression of Substance Use on Social Bonding and Self-Control Variables

| Variable | Alcohol | Tobacco | Depressants | Stimulants |
|---|---|---|---|---|
| **SOCIAL BONDING** | | | | |
| Attachment | | | | |
| school attachment | -.058 | -.059 | -.068 | .058 |
| parental attachment | -.077* | -.099** | -.018 | -.031 |
| peer attachment | .160*** | .122*** | .017 | -.005 |
| parental supervision | -.114*** | -.096** | .001 | -.026 |
| religious attachment | -.017 | -.010 | .006 | .061 |
| Commitment | | | | |
| Educational aspirations | -.135*** | -.193*** | .040 | .022 |
| Occupational aspirations | .047 | .092** | .016 | -.050 |
| grade point average | -.099*** | -.159*** | .012 | .015 |
| Involvement | | | | |
| Educational involvement | -.156*** | -.166*** | -.004 | -.079* |
| Belief | | | | |
| legal norms | -.031 | .024 | -.011 | .012 |
| value of religion | .021 | .015 | .020 | -.047 |
| parental norms | -.035 | .027 | -.010 | -.021 |
| $R^2$ | .154 | .196 | .005 | .012 |
| N | 1,010 | 1,010 | 1,010 | 1,010 |
| **SELF-CONTROL** | | | | |
| Impulsivity | .103** | .077* | .031 | .059 |
| preference for simple tasks | -.010 | .019 | .001 | -.050 |
| risk seeking | .187*** | .147*** | .052 | .091** |
| preference for physical activity | .137*** | .131*** | -.069* | .061 |
| self-centered | -.018 | -.009 | -.003 | -.069* |
| low tolerance | .089** | .170*** | .025 | -.025 |
| $R^2$ | .121 | .125 | .007 | .027 |
| N | 1,010 | 1,010 | 1,010 | 1,010 |

In Table 4-11, the social bonding models appear to have almost no predictive power for depressant and stimulant use, but have moderate explanatory power for alcohol use (15% of variance explained) and tobacco use (20% of explained variance).

Parents attachment, peer attachment and parent supervision variables have significant net effects on alcohol and tobacco use; educational commitment and GPA are significantly related to the alcohol and tobacco use; and educational involvement is significantly related to alcohol and tobacco use. However, the direction of the relationships of peer attachment and occupational commitment with alcohol and tobacco use is opposite from the theoretical expectations of social bonding. The result regarding peer attachment is more consistent with expectations of social learning theory than with social bonding theory. Attachment to school and religion and belief in legal norms, religious, parental norms display no predictive power in the models of alcohol and tobacco use. Furthermore, the social bonding model presents no predictive power with the depressant use and stimulant use except educational involvement (B=-.079 on stimulant use). That is, none of social bonding variables indicates any significant beta coefficients on depressant use and only educational involvement has significant beta coefficient on stimulant use.

In summary, social bonding model is moderately supported as an explanation of alcohol and tobacco use and not supported on depressant and stimulant use. Some of the coefficients on the social bonding variables are not in

the expected direction, which further diminishes the ability of the theoretical construct to explain substance use.

Table 4-11 also presents the results of multiple regression analyses of the self-control variables with each substance use as the dependent variables. As with bonding variables, self-control variables in Table 4-11 explain very little of the variance in depressant and stimulant use, but explain 12% of the variance in alcohol use and 13% of the variance in tobacco use. The results indicate that: (1) alcohol use and tobacco use are significantly affected by risk-seeking, physical activities, impulsivity, and low tolerance index. However, the measure of simple-tasks and self-centered are not significantly related to alcohol and tobacco use; (2) physical activities has only significant effect on depressant use; (3) risk-seeking and self-centered variables are moderately related to stimulant use. Also R-square values are very low on depressant use ($R^2$ =.007) and stimulant use ($R^2$=.027) like in the case of the social bonding models.

Consistent with prior research (Arneklev, et al., 1993), the strongest effect in the OLS regressions is for risk-seeking variables on substance use and the weakest effects on substance use is for simple-tasks, which can be deleted from the low self-control composite. While the operationalization of self-control model used in the analyses are borrowed from Arneklev, et al's study (1993), this result suggests that shortcomings in the theory's current formulation and/or in the operationalization of it that must be modified if it is to prove as powerful as its authors hope.

In summary, the results of OLS regression analyses in Table 4-10 and 4-11 show strong support for the social learning theory for all of the substances used, moderate support for social bonding and self-control theories on alcohol and tobacco use, and no support for social bonding and self-control models on depressant and stimulant use when each model is viewed separately.

Integrated OLS Models of Social Learning, Bonding, and Self-Control Theories

The analyses in the previous section have indicated that the social learning model is well supported as an explanation of substance use and the social bonding and self-control models did not fare as well, although both received some empirical support. Especially, neither bonding nor self-control model was supported on depressant and stimulant use, due to both weak relationships and certain variables associated with the dependent variables in a direction opposite of that expected by the theory. Thus, we can reasonably state that at least as the models are presently operationalized, neither bonding nor self-control theory provide strong models for substance use in Korean data. These findings on the separate models are consistent with findings in previous American studies.

Now, we turn to an examination of the relative explanatory power of the independent variables from each of the models combined into a single regression equation of each substance use. To accomplish this purpose, we place all independent variables including socio-demographic variables in a single regression equation and then successively eliminate each separate set of

theoretical variables from the full equation. This allows evaluating the relative explanatory power of the independent variables from each of the model and which elements of three theoretical models show strong effects on each substance use. That is, regression runs will be performed to establish whether elements of all three theories can make significant contributions to the models.

Combined OLS Regression Models of Alcohol Use

The OLS regression equations summarized in Table 4-12 through 4-15 address the first part of the research question: To what extent is the level of substance use linked to social learning, social bonding, and self-control variables after controlling for socio-demographic variables. The first model in Table 4-12 summarizes the result of OLS model of alcohol use regressed on the all of independent variables. The full equation model (1) explains 61.6% of the variance in alcohol use. This result indicates that the integrated model is not dramatically better than the social learning model alone. Compared to the social learning model in Table 4-10 ($R^2$=.576), the integrated model explains 4% more of the variance in alcohol use.

Like the previous OLS model in Table 4-10, differential peer association variable is a far more powerful predictor than any of the other independent variables. Five variables from social learning theory, differential peer association, father's use, friends' reaction, usual effects of use, and rewards-costs of use, have strong effects on alcohol.

Table 4-12: OLS Regression of Main Effects of Demographic, Social Learning, Social Bonding, and Self-Control Variables, with Alcohol Use as the Dependent Variable

| Variable | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Socio-Demographic Var. | | | | | |
| gender | .051* | | .138*** | .044 | .054 |
| grade level | .008 | | .021 | .011 | .007 |
| school type | .130*** | | .203*** | .132*** | .141*** |
| family structure | .024 | | .005 | .024 | .021 |
| family income | .078*** | | .145*** | .078*** | .083*** |
| parents SES | .003 | | -.007 | .017 | -.001 |
| Social Learning Var. | | | | | |
| positive/negative definitions | .042 | .035 | | .045 | .040 |
| proscriptive definitions | .010 | .016 | | .000 | .008 |
| law abiding/violating definitions | --- | --- | | -.020 | --- |
| neutralizing definitions | -.005 | -.012 | | -.003 | .001 |
| differential peer association | .459*** | .483*** | | .472*** | .458*** |
| father's use | .060** | .059* | | .058* | .060** |
| mother's use | .021 | .020 | | .013 | .020 |
| peer norm qualities | .048 | .046 | | .043 | .050 |
| parents' norm qualities | -.044 | -.040 | | -.048 | -.043 |
| parents' reaction | .039 | .040 | | .036 | .042 |
| friends' reaction | .049* | .054* | | .054* | .050* |
| usual effects of use | .061* | .065* | | .064* | .064* |
| formal deterrence | -.008 | -.011 | | -.013 | -.009 |
| rewards-costs of use | .053* | .053 | | .049 | .058* |
| imitation of peers | -.005 | .013 | | -.012 | .003 |
| imitation of parents | .059 | .051 | | .067 | .065 |
| imitation of other adults | .069 | .056 | | .070 | .063 |
| imitation of advertisements | .044 | .056 | | .048 | .052 |

* p< .05
** p< .01
*** p< .001

Table 4-12 – Continued

| Variable | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Social Bonding Var. | | | | | |
| school attachment | -.016 | -.020 | -.064 | | -.006 |
| parental attachment | -.002 | .005 | -.073* | | .002 |
| peer attachment | .019 | .033 | .104*** | | .019 |
| parental supervision | -.016 | -.022 | -.064* | | -.015 |
| religious attachment | -.019 | -.016 | -.031 | | -.015 |
| educational aspirations | .029 | -.025 | -.018 | | .032 |
| occupational aspirations | -.020 | -.009 | .020 | | -.023 |
| grade point average | -.091*** | -.068** | -.095** | | -.097*** |
| educational involvement | -.049 | -.072** | -.118*** | | -.049 |
| belief in legal norms | -.019 | -.022 | -.031 | | -.019 |
| belief in value of religion | .037 | .035 | .025 | | .036 |
| belief in parental norms | -.029 | -.019 | -.064* | | -.030 |
| Self-Control Var. | | | | | |
| impulsivity | .050* | .060* | .074* | .061* | |
| preference for simple tasks | -.044 | -.048* | -.063* | -.025 | |
| risk seeking | .018 | .025 | .126*** | .026 | |
| preference for physical activity | .016 | .023 | .093** | .019 | |
| self-centered | .008 | .008 | .001 | .001 | |
| low tolerance | .000 | .008 | .047 | .004 | |
| $R^2$ | .616 | .602 | .278 | .603 | .611 |
| $R^2$ Change | | -.014 | -.338 | -.013 | -.005 |
| N | 903 | 903 | 994 | 904 | 903 |

* p< .05
** p< .01
*** p< .001

However, of the elements from social bonding and self-control theories, only GPA from social bonding and impulsivity from self-control theory have significant net effects in the model. Among socio- demographic variables, school type is the strongest predictor, followed by family income and gender. That is, industrial high school students and males coded "1" as dummy variable have more influence on alcohol use than liberal students and females coded "0".

To see if it would be necessary to run separate models for liberal and industrial school students, Appendix D and E present the combined OLS regression models of alcohol use separately for school type. As indicated in Appendix D and E, comparison of drinking behavior for industrial school students and liberal school students showed virtually no differences in the significant predictors and in the changes in $R^2$ of model (1) through (5) compared to those in Table 4-12. There is a little difference in overall $R^2$. That is, R-Squares for industrial school student models are moderately greater than those of liberal school student models. The combined OLS regression models of tobacco, depressant, and stimulant use by school type differences (tables not presented here) are similar to those of alcohol use by school type. Therefore, in the main models analyzed here, type of school is entered as a variable, but separate runs are not needed for liberal and industrial schools.

Students having more family income have more influence on alcohol use than students having less family income. However, the standardized beta coefficients of grade level, family structure, and parents' SES are not significant in the model although they are positively associated with the dependent variable.

The second model indicates that the three theories excluding socio-demographic factors explain 60.2% of the variance in alcohol use. When the demographic variables are eliminated, the remaining variables from three theoretical models are effective. In short, the explanatory power of the model is not dependent on socio-demographic factors because their removal from model (2) reduces the explained variance by only .014. In this model, differential peer association also has the strongest effect on alcohol use, but the effect of rewards-costs of use has been reduced. Of the social bonding variables, educational involvement is included as a significant variable; preference for simple tasks variable from self-control theory also is significant in this model.

The third model summarizes the partial model excluding social learning variables from the full equation model. When the social learning factors are eliminated, the remaining variables explain 27.8% of the variance in alcohol use. The change in $R^2$ is dramatic when compared to the first model ( $R^2$ change= .338). This result demonstrates that social learning factors have the greatest effects on the dependent variable. Any model with social learning variables will explain high level of variance; any model without them will explain moderate levels. On the other hand, removal of demographic, bonding, and self-control variables has no significant impact on predictive power of the model. Social learning variables account for an additional 33.8% of that variance in the model ( $R^2$ change= .338) and is dramatically better than any other independent variables. At the subset level, when the social learning variables are excluded, parental and peer attachment, parental supervision, and parental norm variables

from social bonding theory and risk-seeking and preference for physical activity variables from self-control theory have significant effects on alcohol use.

The fourth model excludes social bonding variables from the full equation model. This partial model explains 60.3% of the variance in the dependent variable, indicating that the absence of bonding variables only slightly affects explanatory power, accounting for only 1.3% less variance than the full model. In this fourth model, with only social learning and self-control variables, the self-control variables have no significant effects. This result implies that in the presence of social learning variables self-control factors are largely spurious in explaining alcohol use.

This conclusion is supported by results for the final model (5) which excludes self-control variables. When the self-control factors are excluded, the remaining independent variables explain 61.1% of variance, essentially the same as the full model. Compared to model 4, self-control factors are not better than social bonding factors in explaining alcohol use because the change in $R^2$ (.005) is less than the change of $R^2$ in model 4 (.013). Also, when elements of social bonding theory are placed in the same regression equation with social learning variables in the model, the significant effects of parental attachment, peer attachment, and parental supervision shown in model 3 disappeared. This result implies that social bonding variables are also spurious in explaining alcohol use; they have an effect mainly because they are correlated with social learning variables.

In summary, when all of the independent variables are placed in the single full equation, the social learning model stands alone as the most efficient predictor of alcohol use. Neither the social bonding nor the self-control variables offer a significant addition to the predictive power of alcohol use. Socio-demographic variables also have little net effect on alcohol use. However, school type and family income consistently have strong effects on the dependent variable whether the other three theoretical factors are eliminated from the each model or not. The differential peer association has the strongest net effects on alcohol in all of the model. Generally father's use, friends' reaction, and usual effects of use from social learning theory; GPA from social bonding theory; and impulsivity variable from self-control theory have consistently significant influence on the dependent variable. However, when elements of social bonding or self-control variables were placed in the same regression equation with social learning variables, most of their significant effects disappeared. These results are, in general, consistent with the previous studies conducted in the United States (See, Akers and Cochran, 1985 and Benda, 1994).

Combined OLS Regression Models of Tobacco Use

Table 4-13 presents the results of OLS equations for tobacco use. In model 1, the result shows that 69.5% of the variance in tobacco use is explained by the full model. The findings show that: (1) differential peer association variable has the strongest, positive effect on tobacco use (B=.504); (2) among social learning variables,

Table 4-13: OLS Regression of Main Effects of Demographic, Social Learning, Social Bonding, and Self-Control Variables, with Tobacco Use as the Dependent Variable

| Variable | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Socio-Demographic Var. | | | | | |
| gender | -.014 | | .215*** | -.018 | -.011 |
| grade level | .001 | | .011 | .009 | .002 |
| school type | .082** | | .238*** | .091*** | .083** |
| family structure | .004 | | .035 | -.002 | .002 |
| family income | .070*** | | .121*** | .070*** | .071*** |
| parents' SES | .006 | | .022 | .021 | .005 |
| Social Learning Var. | | | | | |
| positive/negative definitions | .055* | .057* | | .056* | .055* |
| proscriptive definitions | .039 | .039 | | .041 | .042 |
| law abiding/violating definitions | --- | --- | | -.012 | --- |
| neutralizing definitions | -.023 | -.026 | | -.018 | -.025 |
| differential peer association | .504*** | .511*** | | .524*** | .504*** |
| father's use | .007 | .005 | | .012 | .011 |
| mother's use | .000 | .004 | | .001 | -.011 |
| peer norm qualities | .055* | .054* | | .052* | .057* |
| parents' norm qualities | -.030 | -.030 | | -.026 | -.031 |
| parents' reaction | .125*** | .130*** | | .125*** | .125*** |
| friends' reaction | -.007 | -.014 | | -.003 | -.012 |
| usual effects of use | .103*** | .103*** | | .107*** | .106*** |
| formal deterrence | -.013 | -.019 | | -.013 | -.016 |
| rewards-costs of use | .046 | .053* | | .049* | .043 |
| imitation of peers | -.006 | .008 | | -.009 | -.002 |
| imitation of parents | .084* | .079* | | .085* | .085 |
| imitation of other adults | -.005 | -.020 | | -.009 | -.011 |
| imitation of advertisements | .056 | .063 | | .063 | .059 |

* p< .05
** p< .01
*** p< .001

Table 4-13 --- Continued

| Variable | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Social Bonding Var. | | | | | |
| school attachment | -.032 | -.037 | -.054 | | -.034 |
| parental attachment | -.016 | -.011 | -.101** | | .014 |
| peer attachment | .041 | .051* | .070* | | .035 |
| parental supervision | -.025 | -.025 | -.028 | | -.027 |
| religious attachment | -.037 | -.038 | -.028 | | -.032 |
| educational aspirations | .012 | -.013 | -.034 | | .010 |
| occupational aspirations | -.002 | .001 | .047 | | .000 |
| grade point average | -.069*** | -.053* | -.161*** | | -.070*** |
| educational involvement | -.043 | -.063** | -.121*** | | -.040 |
| belief in legal norms | .011 | .005 | .020 | | .010 |
| belief in value of religion | .012 | .013 | .022 | | .007 |
| belief in parental norms | .004 | .005 | -.019 | | .009 |
| Self-Control Var. | | | | | |
| impulsivity | -.002 | .009 | .037 | .003 | |
| preference for simple tasks | -.018 | -.019 | -.038 | .001 | |
| risk seeking | -.023 | -.021 | .104*** | -.019 | |
| preference for physical activity | -.013 | -.015 | .062* | -.011 | |
| self-centered | -.017 | -.020 | .003 | -.027 | |
| low tolerance | .063** | .066** | .115*** | .065** | |
| $R^2$ | .695 | .689 | .340 | .684 | .691 |
| $R^2$ Change | | -.006 | -.355 | -.011 | -.004 |
| N | 888 | 888 | 994 | 889 | 888 |

* p< .05
** p< .01
*** p< .001

parents' reaction has a strong effect on tobacco use (B=.125), followed by usual effects of use, imitation of parents, positive/negative definition and peer norm qualities variables; (3) GPA from bonding theory and low-tolerance from self-control theory have significant effects on tobacco use; and (4) among socio-demographic variables, school type and family income have strong and positive effects on the dependent variable.

In model 2, the results indicate that 68.9% of the variance in tobacco use is explained even when the socio-demographic variables are excluded. The change in $R^2$ (.006) from the full model is small, indicating that the demographic variables have no significant net effects on tobacco use. The results further show that (1) within social learning factors, rewards-costs of use are included as a significant variable, compared to the full model; (2) within social bonding variables, peer attachment and educational involvement have significant effects.

Thirty-four percent of the variance in tobacco use is explained in model 3. When social learning variables are excluded, the change in $R^2$ (.355) is great, indicating that it is the social learning factors that have the greatest impacts on tobacco use. This result implies that when the elements of social learning theory are placed in the regression equation with other independent variables, they explain 35.5% additional variance. Results further show that in the model, parental attachment, risk-seeking, and preference for physical activity are variables that have significant effects on tobacco.

In models 4 and 5, when the social bonding factors are eliminated, the remaining variables explain 68.4% of the variance in tobacco use and when the

self-control factors are eliminated, the other independent variables explain 69.1% of variance. This result shows that when bonding and self-control variables are excluded, there is little change in the explained variance (.011 on social bonding theory and .004 on self-control theory). Furthermore, when elements of both theories are placed in the same regression equations with social learning factors after controlling for socio-demographic variables, most of their significant effects on tobacco use disappear, consistent with the results for alcohol use in Table 4-12. This indicates that the effects of social bonding and self-control variables are largely spurious in explaining tobacco use; their effects are mostly mediated through social learning variables.

In summary, when the all of the independent variables are placed within the single full equation, $R^2$ didn't increase compared to the model in which social learning variables alone explain variance in tobacco use in Table 4-10 (.695 vs. .669). Of the social learning variables, differential peer association has the strongest impact on tobacco in all of the regression equations. Five elements of social learning theory such as positive/negative definitions, differential peer association, peer norm qualities, parent's reaction, and usual effects of use have significant effects on tobacco use in model 1 through model 5, while only one element of social bonding (GPA) and one element of self-control theory (low tolerance) has significant effects on the dependent variable. This finding remains consistent with previous studies that have found greatest support for the effects of social learning factors on tobacco use as well as other substance use.

Table 4-14: OLS Regression of Main Effects of Demographic, Social Learning, Social Bonding, and Self-Control Variables, with Depressant Use as the Dependent Variable

| Variable | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Socio-Demographic Var. | | | | | |
| gender | -.057* | | -.246*** | -.049 | -.060* |
| grade level | -.013 | | .020 | -.013 | -.012 |
| school type | .010 | | .073 | -.001 | .011 |
| family structure | -.006 | | -.027 | -.012 | -.009 |
| family income | .064* | | .105** | .071* | .069* |
| parents' SES | .028 | | .044 | .028 | -.027 |
| Social Learning Var. | | | | | |
| positive/negative definitions | .053 | .052 | | .049 | .053 |
| proscriptive definitions | -.004 | -.005 | | -.003 | -.002 |
| law abiding/violating definitions | --- | --- | | .020 | --- |
| neutralizing definitions | -.029 | -.029 | | -.027 | -.028 |
| differential peer association | .502*** | .523*** | | .505*** | .504*** |
| father's use | .052 | .049 | | .051 | .050 |
| mother's use | .139*** | .137*** | | .131*** | .138*** |
| peer norm qualities | -.027 | -.023 | | -.024 | -.029 |
| parents' norm qualities | -.025 | -.020 | | -.020 | -.023 |
| parents' reaction | -.034 | -.030 | | -.038 | -.036 |
| friends' reaction | .037 | .038 | | .033 | .036 |
| usual effects of use | .060 | .057 | | .063 | .061 |
| formal deterrence | .030 | .030 | | .034 | .029 |
| rewards-costs of use | .030 | .034 | | .035 | .031 |
| imitation of peers | -.037 | -.031 | | -.034 | -.030 |
| imitation of parents | -.009 | -.013 | | -.004 | -.016 |
| imitation of other adults | .133 | .124 | | .128 | .134 |
| imitation of advertisements | -.039 | -.040 | | -.040 | -.038 |

* p< .05
** p< .01
*** p< .001

Table 4-14 – Continued

| Variable | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Social Bonding Var. | | | | | |
| school attachment | -.056 | -.061* | -.069 | | -.056 |
| parental attachment | .026 | .028 | -.012 | | .022 |
| peer attachment | .042 | .045 | .024 | | .036 |
| parental supervision | -.009 | -.001 | -.027 | | -.010 |
| religious attachment | -.018 | -.020 | .018 | | -.016 |
| educational aspirations | -.007 | .002 | .031 | | -.006 |
| occupational aspirations | .003 | -.002 | .037 | | .002 |
| grade point average | -.017 | -.015 | -.010 | | -.020 |
| educational involvement | .062* | .052 | .059 | | .062* |
| belief in legal norms | -.005 | -.014 | .013 | | -.005 |
| belief in value of religion | .019 | .019 | .011 | | .017 |
| belief in parental norms | .029 | .023 | .019 | | .030 |
| Self-Control Var. | | | | | |
| impulsivity | .033 | .043 | .008 | .032 | |
| preference for simple tasks | -.007 | -.009 | -.012 | -.007 | |
| risk seeking | .000 | -.003 | .058 | -.007 | |
| preference for physical activity | -.046 | -.055 | -.027 | -.040 | |
| self-centered | -.003 | -.007 | .024 | -.005 | |
| low tolerance | .031 | .030 | .037 | .028 | |
| $R^2$ | .488 | .482 | .081 | .482 | .485 |
| $R^2$ Change | | -.006 | -.407 | -.006 | -.003 |
| N | 879 | 879 | 994 | 880 | 879 |

* p< .05
** p< .01
*** p< .001

Combined OLS Regression Models of Depressant Use

Table 4-14 summarizes the results of OLS regression equations on depressant use. In the first model, all of the independent variables explain 48.8% of the variance in depressant use. As with the other substance, the peer association variable was the strongest net impact on the dependent variable. In model 3, when social learning factors are eliminated, only 8.1% of the variance is explained by the other independent variables. However, in models 2, 4, and 5, when socio-demographic, social bonding, self-control variables are excluded from the each model, the change in $R^2$ is pretty small (.006, .006, and .003, respectively). This result indicates again that social learning factors have the greatest impact on depressant use, followed by social bonding, socio-demographic, and self-control variables.

At the subset analyses, peer association and mother's use variables have the strongest effects on the dependent variable in all of the regression equations. It is interesting that mother's use which was not associated with alcohol and tobacco use, is strongly associated with depressant use. As indicated in Table 4-6, females are more likely to use depressants, stimulants, and tranquilizes than males are. The girls' use of depressants is particularly strongly affected by mother's use. School attachment and educational involvement have moderate effects, but none of the self-control variables has a significant net effect on depressant use.

Table 4-15: OLS Regression of Main Effects of Demographic, Social Learning, Social Bonding, and Self-Control Variables, with Stimulant Use as the Dependent Variable

| Variable | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Socio-Demographic Var. | | | | | |
| gender | -.002 | | -.059 | -.002 | -.007 |
| grade level | .012 | | .033 | .014 | .010 |
| school type | -.019 | | .021 | .016 | -.007 |
| family structure | -.043 | | -.014 | -.036 | -.042 |
| family income | .013 | | .024 | .008 | .017 |
| parents' SES | .033 | | .023 | .033 | .025 |
| Social Learning Var. | | | | | |
| positive/negative definitions | -.049 | -.048 | | -.041 | -.033 |
| proscriptive definitions | .028 | .028 | | .025 | .028 |
| law abiding/violating definitions | --- | --- | | -.010 | --- |
| neutralizing definitions | -.057 | -.056 | | -.059 | -.044 |
| differential peer association | .565*** | .565*** | | .565*** | .570*** |
| father's use | .159*** | .161*** | | .157*** | .165*** |
| mother's use | .073* | .068* | | .075** | .075** |
| peer norm qualities | .083* | .086* | | .077 | .077 |
| parents' norm qualities | .078* | .080* | | .074* | .082* |
| parents' reaction | .022 | .022 | | .016 | .008 |
| friends' reaction | .016 | .019 | | .027 | .017 |
| usual effects of use | .008 | .006 | | .007 | .014 |
| formal deterrence | -.046 | -.043 | | -.041 | -.049 |
| rewards-costs of use | .020 | .021 | | .015 | .013 |
| imitation of peers | .045 | .041 | | .044 | .051 |
| imitation of parents | -.104 | -.101 | | -.097 | -.105 |
| imitation of other adults | .117 | .124 | | .124 | .114 |
| imitation of advertisements | -.023 | -.034 | | -.031 | -.017 |

* p< .05
** p< .01
*** p< .001

Table 4-15 -- Continued

| Variable | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Social Bonding Var. | | | | | |
| school attachment | .032 | .023 | .045 | | .044 |
| parental attachment | .004 | .003 | -.022 | | -.004 |
| peer attachment | -.013 | -.013 | -.035 | | .008 |
| parental supervision | -.048 | -.045 | -.029 | | -.043 |
| religious attachment | .011 | .009 | .060 | | .014 |
| educational aspirations | -.028 | -.020 | .031 | | -.026 |
| occupational aspirations | -.058 | -.056 | -.042 | | -.064* |
| grade point average | .024 | .019 | .017 | | .016 |
| educational involvement | -.038 | -.037 | -.055 | | -.038 |
| belief in legal norms | .019 | .024 | .019 | | .021 |
| belief in value of religion | -.020 | -.022 | -.049 | | -.021 |
| belief in parental norms | .002 | .005 | -.012 | | .002 |
| Self-Control Var. | | | | | |
| impulsivity | .052 | .054 | .056 | .049 | |
| preference for simple tasks | -.040 | -.041 | -.060 | -.034 | |
| risk seeking | .032 | .030 | .080* | .040 | |
| preference for physical activity | .030 | .026 | .076* | .025 | |
| self-centered | -.090*** | -.089*** | -.066* | -.090*** | |
| low tolerance | -.018 | -.018 | -.026 | -.014 | |
| $R^2$ | .445 | .442 | .044 | .437 | .431 |
| $R^2$ Change | | -.003 | -.401 | -.008 | -.014 |
| N | 879 | 879 | 994 | 880 | 879 |

* p< .05
** p< .01
*** p< .001

Combined OLS Regression Models of Stimulant Use

Table 4-15 displays the results of OLS regression equations on stimulant use. In model 1, all of the independent variables explain 44.5% of the variance in stimulant use and peer association has the strongest impact on the dependent variable. Consistent with the findings on alcohol, tobacco, and depressant use, when the social learning variables are eliminated from the full equation model, only 4.4% of the variance is explained by the remaining variables. However, when the other independent variables derived from social bonding and self-control theories, and the demographics are eliminated, the change in $R^2$ is extremely small (.008, 014, and .003, respectively).

None of the demographic variables and social bonding variables except occupational aspirations in model 5 has a significant net effect on stimulant use. However, five variables from the social learning theory –differential peer association, father's use, mother's use, peer and parents norm qualities- are significantly associated with stimulant use. Among self-control variables, the self-centered variable has a significant effect on stimulant use. Risk-seeking and preference for physical activity variables have moderate effects on the dependent variables in model 3 in which social learning factors are eliminated.

In summary, the full and reduced regression equations on alcohol, tobacco, depressant, and stimulant use have been presented and discussed. First, the results strongly support the major elements of the social learning theory. By far the best predictors of adolescents' substance use in Korea are the peer association variables including peer use of drugs and the proportion of peer

use on substance use. These findings suggest that adolescent alcohol, tobacco, depressant, and stimulant use in Korean society just as in American society conform to the behavioral and value structure of the peer influence groups. However, the associative and learning processes involved in substance use have also to do with the parental influence. For example, the results indicate that (1) adolescents tobacco use was strongly associated with parents' reaction; (2) depressant use was related to mother's use; (3) and stimulant use also was significantly correlated with father and mother's use and parents norm qualities. These peer and parental influences on substance use will be discussed at next chapter in detail.

Second, variables from social bonding and self-control theories add little explained variance beyond that accounted for by social learning variables. When variables from these two theories are placed in the same equations with social learning variables, most of their net effects disappeared while social learning variables retain their strength. Again these findings reflect similar results when these theories are compared with American samples.

Finally, adolescent alcohol and tobacco use are strongly or moderately associated with gender, school type and family income. Gender is a factor in depressant use (girls are more likely to take depressants than boys). Females can get drugs very easily and cheaply such as depressants, stimulants, and tranquilizers, but not alcohol and tobacco in supermarkets, without a doctor's prescription. Also females are more likely to use them for medical purpose like menstrual cramps or stomach aches.

In addition, daughters' use is significantly correlated with mothers' use of depressants. In Korean society, generally, mothers more than fathers feel more responsibility and pressure to be a good parents and most child-rearing activities are carried out by mothers. Mothers are perceived to have a greater responsibility than fathers for their child's well-being and outcome (Cho & Shin, 1996). As a result, adolescents have more open communication with mothers than fathers and generally feel close to their mothers, thus having stronger cohesion with mothers than fathers (Cho & Shin, 1996). However, mothers give more freedom and independence to sons than daughters, so that using alcohol and tobacco are more acceptable for males than for females. But females are probably more likely to initiate the self-medication done by mothers for female-related problems.

As indicated in Appendix F, it is noted that mothers are significantly more likely to use depressants than fathers as their daughters are more likely to use depressants than their sons presented in Table 4-6. This result is consistent with previous American studies (Clayton et al., 1986; Fisher et al., 1987; Kandel, 1990). That is, women have been found to use prescribed drugs more frequently than males (Clayton et al., 1986) and there are significant correlations between daughters and their mothers for hallucinogen use (Fisher et al., 1987). In addition, Kandel (1990) suggested the greater influence of mothers than fathers on their children's drug use.

In general, daughters have more open communication with their mothers than sons in Korea as well as the United States. Daughters have stronger

attachment to their mothers than do sons. Thus, it is not surprising in Korea that depressant use by females is strongly associated with mothers' use. Once introduced to those drugs for self-medication, girls then have a higher risk of using them for non-medical, recreational purposes (which is the focus of this study).

## CHAPTER 5
## DATA ANALYSIS AND FINDINGS: PEER AND PARENTAL INFLUENCES ON SUBSTANCE USE

The second purpose of this study is to investigate the direct, indirect, and relative influence of peer and parents on substance use among Korean adolescents. To examine the relative influence of parental and peer variables, they will be placed in separate and combined regression equations for each of the substances.

Parental variables included measures of father and mother's use, parents' norm qualities, parents' reaction, and imitation of parents (from the social learning variables) and parental attachment, parental supervision, and belief in parental norms (from the social bonding variables). Peer variables included measures of peer association, peer norm qualities, peer reaction, and imitation of peers (from social learning variables) and peer attachment (from social bonding variables).

The result presented in the upper part of Table 5-1 shows that the peer variables explain 54% of the variance in alcohol use, 64% in tobacco use, 42% in depressant use, and 34% in stimulant use. Differential peer association is the strongest predictor of each type of drug use (B=.56 to .64). Peer norm qualities (B=.07 to .12), peer reaction (B=.05 to .08), and imitation of peers (B=.11 to .18) have significant net effects on alcohol and tobacco use. Peer attachment has no net effects on use of any of the substances.

Table 5-1: OLS Regression of Substance Use on Peer and Parental Variables

| Variable | Alcohol | Tobacco | Depressants | Stimulants |
|---|---|---|---|---|
| Peer Variables | | | | |
| peer association | .558*** | .640*** | .586*** | .570*** |
| peer norm qualities | .107*** | .118*** | .069* | .028 |
| peer reaction | .075*** | .059** | .053* | .010 |
| imitation of peers | .182*** | .107*** | .041 | .026 |
| peer attachment | .010 | .013 | .015 | -.027 |
| $R^2$ | .541 | .640 | .416 | .338 |
| N | 1006 | 991 | 981 | 981 |
| Parental Variables | | | | |
| father's use | .103*** | .075** | .120*** | .198*** |
| mother's use | .029 | .026 | .316*** | .079* |
| parents' norm qualities | -.007 | -.020 | .133*** | -.045 |
| parents' reaction | .157*** | .293*** | .106** | .078* |
| imitation of parents | .437*** | .433*** | .053 | .082* |
| parental attachment | -.020 | -.043 | .025 | -.013 |
| parental supervision | -.090** | -.076** | .010 | -.020 |
| belief in parental norms | -.016 | .027 | .001 | -.013 |
| $R^2$ | .282 | .365 | .264 | .075 |
| N | 910 | 910 | 910 | 910 |

* p< .05
** p< .01
*** p< .001

The results shown in the lower part of Table 5-1 indicate that 28% of the variance in alcohol use, 37% in tobacco use, 27% in depressant use, and 8% in stimulant use are explained by the measures of parental influence. For alcohol and tobacco use, imitation of parents has the strongest effect on alcohol use, followed by parents' reaction, father's use, and parental supervision. For depressant and stimulant use, all of the parental variables derived from the social learning theory have statistically significant effects, but parental attachment, parental supervision, and belief in parental norms from the social bonding theory, have no net effects.

Table 5-2 presents adolescent substance use on the regression models including both peer and parental variables. Results indicate that (1) differential peer association (B=.52) has the strongest effect, followed by imitation of parents (B=.15), peer norm qualities (B=.09), and peer reaction (B=.09) for alcohol use; (2) differential peer association (B=.59) has the greatest effect, followed by parents' reaction (B=.13), imitation of parents (B=.11), and peer norm qualities (B=.11) for tobacco use; (3) peer association, father's use, and mother's use generally have strong effects on depressant and stimulant use.

Not surprising, differential peer association remains the best predictor of substance use. Peer norm qualities and peer reaction have moderate effects on alcohol and tobacco use. With regard to parental effects, results show that parents' reaction and imitation of parents have generally strong net effects on alcohol and tobacco use, but not on depressant and stimulant use.

Table 5-2: Substance Use on the Full Regression Including Alcohol, Tobacco, Depressants, and Stimulants

| Variable | Alcohol | Tobacco | Depressants | Stimulants |
|---|---|---|---|---|
| peer association | .524*** | .587*** | .544*** | .570*** |
| peer norm qualities | .088*** | .107*** | .022 | .069 |
| peer reaction | .085*** | .015 | .043 | .018 |
| imitation of peers | .060 | .034 | -.014 | .069 |
| peer attachment | .040 | .044* | .030 | .002 |
| father's use | .053* | .019 | .046 | .161*** |
| mother's use | .015 | .004 | .135*** | .070* |
| parents' norm qualities | -.037 | -.016 | .037 | -.082* |
| parents' reaction | .057* | .134*** | -.015 | -.001 |
| imitation of parents | .153*** | .114*** | .043 | -.054 |
| parental attachment | -.017 | -.032 | .017 | -.006 |
| parental supervision | -.043 | -.030 | -.007 | -.041 |
| belief in parental norms | -.020 | -.003 | .011 | .015 |
| $R^2$ | .564 | .653 | .465 | .413 |
| N | 905 | 892 | 884 | 884 |

* p< .05
** p< .01
*** p< .001

On the other hand, father and mother's use have generally strong effects on depressant and stimulant use, but not on alcohol and tobacco use.

In summary, this study found that adolescents, regardless of drug use behavior, generally report stronger influence of peers than of parents. Again these replicate findings from American studies. Hwang (1999) found, using data from the Boystown study that peer variables, especially differential peer association, had greater effects on alcohol, marijuana, stimulants or depressants, and stronger drugs than did parental variables. The results of this research support Akers' suggestion that "it is in peer groups that the first availability and opportunity for delinquent acts are typically provided and that peer association variables are strongly related to delinquency, alcohol, drug use, adult crime, and other forms of deviant behavior" (Akers, 1997:74).

The next step in the analysis is to examine the direct and indirect peer and parental effects on substance use. According to Kandel (1996), there are two pathways by which parental factors contribute to substance use through peer influence. One assumed pathway is from parenting to adolescent deviance to peer group affiliation and the other pathway used here runs from parenting to peer group affiliation and from peer group affiliation to adolescent deviance, as shown in Figure 5.1. The latter pathway has been proposed by Patterson and his colleagues (Dishion et al., 1991 and Patterson et al., 1992), as well as by others (Brook et al., 1990; Elliott et al., 1985; and Melby et al., 1993). This mediation of parental influence by peer variable is also consistent with social learning theory.

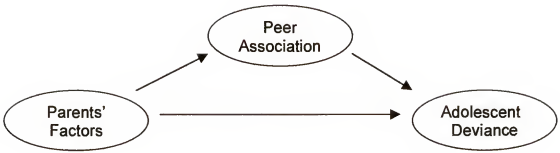


Figure 5.1: Causal Model of Indirect Parental Effects on Adolescent Affiliation with Deviant Peers

To consider this pathway, I placed all parental variables in the theoretical model shown in Figure 5.2, which has both direct and indirect effects (through peer association) of the parental variables on substance use.

The results from the path analysis of adolescent substance use are shown in Tables 5-3 through 5-6 and illustrated in Figures 5-3 through 5-6. The initial path analysis indicated that some of the parental variables had small and insignificant correlations with substance use. Therefore, the model was recomputed for each type of substance use after eliminating non-significant paths.

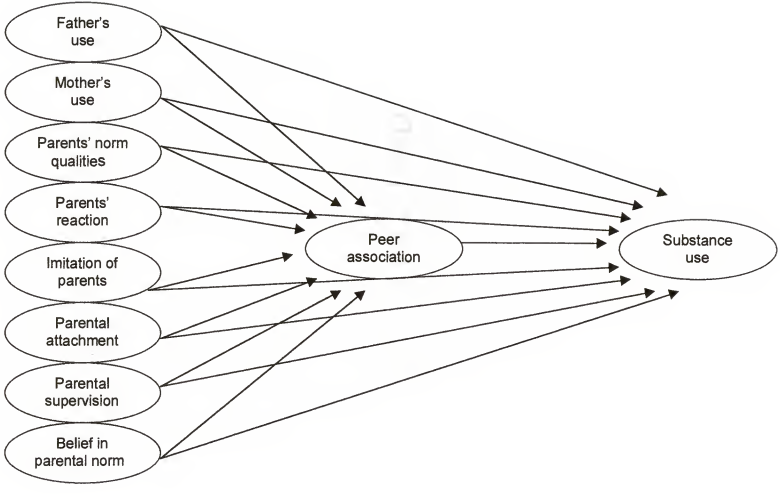


Figure 5-2: Hypothesized Path Model of Adolescent Substance Use

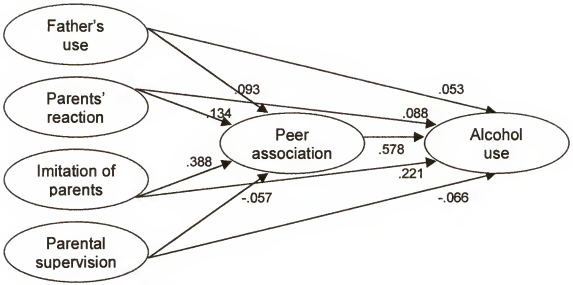


Figure 5-3: Path Diagram for Adolescent Alcohol Use

Table 5-3: Indirect and Direct Effects of Parental Variables on Adolescent Alcohol Use (standardized)

| Parental variables | Direct effects on peer association | Indirect effects through peer association | | Direct effects on alcohol use |
|---|---|---|---|---|
| Father's use | .093 | .054 | > | .053 |
| Parents' reaction | .134 | .078 | < | .088 |
| Imitation of parents | .388 | .224 | > | .221 |
| Parental supervision | -.057 | -.033 | < | -.066 |

As shown in Table 5-3 and Figure 5-3, the parents' reaction and parental supervision have direct effects on alcohol use. The influences of imitation of parents and father's use of alcohol on their children's use are indirect through peer association. By far the strongest parental impact on alcohol use comes from the adolescent's imitation of parental drinking.

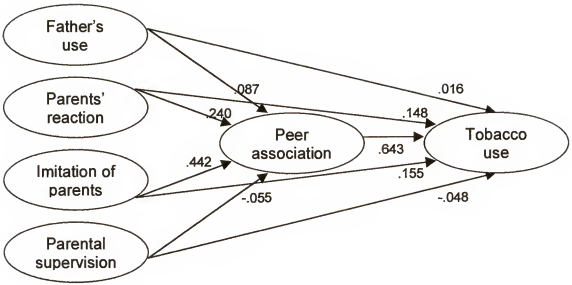


Figure 5-4: Path Diagram for Adolescent Tobacco Use

Table 5-4: Indirect and Direct Effects of Parental Variables on Adolescent Tobacco Use (standardized)

| Parental variables | Direct effects on peer association | Indirect effects through peer association | | Direct effects on alcohol use |
|---|---|---|---|---|
| Father's use | .087 | .056 | > | .016 |
| Parents' reaction | .240 | .154 | > | .148 |
| Imitation of parents | .442 | .284 | > | .155 |
| Parental supervision | -.055 | -.035 | < | -.048 |

Table 5-4 and Figure 5-4 present the results of path analysis of tobacco use. Of the four significant variables, only parental supervision has a direct influence on tobacco use. Father's use, imitation of parents, and parents' reaction have indirect effects through peer association variable on tobacco use. Among the parental variables, as indicated the result of alcohol use, the strongest parental impact on tobacco use comes from the adolescent's imitation of parental smoking.

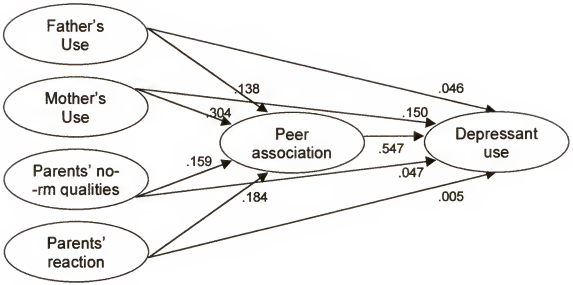


Figure 5-5: Path Diagram for Adolescent Depressant Use

Table 5-5: Indirect and Direct Effects of Parental Variables on Adolescent Depressant Use (standardized)

| Parental variables | Direct effects on peer association | Indirect effects through peer association | | Direct effects on alcohol use |
|---|---|---|---|---|
| Father's use | .138 | .076 | > | .046 |
| Mother's use | .304 | .166 | > | .150 |
| Parents' norm qualities | .159 | .087 | > | .047 |
| Parents' reaction | .184 | .101 | > | .005 |

As shown in Table 5-5 and Figure 5-5, it is noted that all of parental variables (father's use, mother's use, parents' norm qualities, and parents' reaction) which had statistically significant effects on the dependent variable have indirect effects through peer association variable on depressant use.

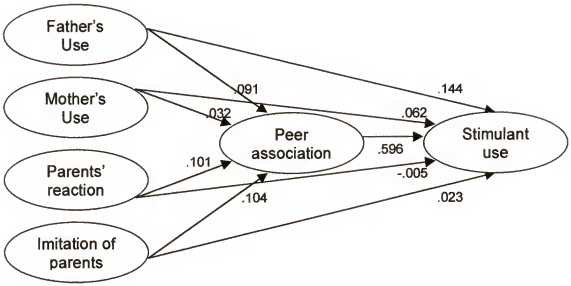


Figure 5-6: Path Diagram for Adolescent Stimulant Use

Table 5-6 Indirect and Direct Effects of Parental Variables on Adolescent Stimulant Use (standardized)

| Parental variables | Direct effects on peer association | Indirect effects through peer association | | Direct effects on alcohol use |
|---|---|---|---|---|
| Father's use | .091 | .054 | < | .144 |
| Mother's use | .032 | .019 | < | .062 |
| Parents' reaction | .101 | .060 | > | -.005 |
| Imitation of parents | .104 | .062 | > | .023 |

Table 5-6 and Figure 5-6 show that father's and mother's use have direct relationships with stimulant use. The influences of parents' reaction and imitation of parents have indirect effects through peer association variable on stimulant use.

There were several major findings in these path analyses. First, as expected, peer association had a direct positive effect upon each substance use. Second, imitation of parents and father's use had greater indirect relationships with alcohol and tobacco use than direct influence on them, while parental supervision had a greater direct effect on alcohol and tobacco use.

Third, parents' reaction had a greater direct influence on alcohol use, but a greater indirect effect through peer association on tobacco use. Fourth, father's use and mother's use had greater indirect effects on depressant use, but they had greater direct effects on stimulant use. Finally, after controlling for father's use, imitation of parents, parents' reaction, and parental supervision variables, mother's use, parents' norm qualities, parental attachment and belief in parental norms were not associated with alcohol and tobacco use.

These findings show that (1) peer association is the major influence on adolescent substance use and (2) adolescents who have parents who use alcohol, tobacco, depressants, and stimulants tend to have peers who use them as well. Compatible with previous research, having peers who use drugs appears to be the dominant influence on whether adolescent use drugs, especially tobacco and depressants. Therefore, these results indicate that parental influences are only greater influence indirectly through peer use than their influences are directly associated with alcohol, tobacco, depressant, and stimulant use by Korean adolescents.

# CHAPTER 6
# SUMMARY AND CONCLUSIONS

## Summary

The purpose of this study was to examine the major concepts of three theories of deviance to determine how well they do in explaining adolescent drug use, and to explore the direct, indirect, and relative influence of peer and parental variables derived from the social learning, social bonding, and self-control theory on substance use by Korean adolescents.

The first issue addressed deals with how much these theories respectively explain adolescent substance use, and which has the most empirical support. The social learning theory proposes that deviant behavior is learned through the processes in which all behaviors are learned. From this point of view, association with peers who use substances, the perception that substance use will be socially rewarded, exposure to substance use models, and the holding of positive beliefs and definitions on using drugs, will tend to be associated with substance use.

On the other hand, the social bonding theory emphasizes that persons with a strong bond to society will refrain from deviant behaviors. Thus, persons with a strong attachment to family and peers, with a commitment to conformity, with involvement in normative activities, and with a strong belief in societal norms and respect for authority, will be less likely to use drugs than those with weaker

bonds in those areas. The self-control theory maintains that deviant behavior is caused by low self-control. According to this theory, those persons who have high level of impulsivity, preference for simple tasks, risk-seeking, preference for physical activity, self-centered, and low tolerance, will be apt to use drugs.

The findings from this analysis provide clear support for the social learning theory. By far the best predictor of adolescents' substance use is the peer association factor of the social learning theory. These findings suggest that adolescent substance use conforms to the behavioral and value structure of the peer influence groups.

Bivariate analyses showed that all of the social learning factors had higher correlations with frequency of substance use than did elements of social bonding and self-control theories. All of the social learning variables were significantly associated with alcohol, tobacco, depressant, and stimulant use, ranging from .07 to .78. However, half of the social bonding variables were not significantly correlated with alcohol and tobacco use and none of those variables were significantly associated with depressant and stimulant use. Self-control variables were moderately, but significantly related to alcohol, tobacco, and stimulant use but none of those variables were significantly correlated with depressant use.

Multivariate analyses indicated that social learning variables statistically accounted for significant amounts of the variance in adolescents' substance use. The social learning model explained 58% of the variance in alcohol use, 67% of tobacco use, 47% of depressant use, and 42% of stimulant use. However, social bonding variables explained 15% of the variance in alcohol use, 20% in tobacco

use, 0.5% of in depressant use, and 1.2% of in stimulant use. On the other hand, 12% of the variance in alcohol use, 13% in tobacco use, 0.7% of depressant use, and 2.7% of stimulant use were explained by the self-control variables. In the full and reduced regression equations on substance use, the social learning models also stand alone as the most efficient predictors of substance use after considering the effects of socio-demographic variables. Neither the social bonding nor the self-control variables offer a significant addition to the predictive power of substance use.

Social bonding and self-control theories are supported by the findings, but only when the effects of social learning variables are not considered. When elements of social bonding or self-control variables were placed in the same regression equation with the social learning variables, most of their effects disappeared. Social bonding and self-control variables appear to have their effects on alcohol, tobacco, depressant, and stimulant use primarily through their influences with social learning variables. The principal conclusion based on testing these three theoretical models is that social learning theory offers an explanation of adolescent substance use in Korea that is empirically supported to a much grater degree than are social bonding and self-control explanations. These results are in general accord with the previous studies conducted in the United States (Akers and Cochran, 1985; White et al., 1986; McGee, 1992; Benda, 1994).

There is, in fact, a number of studies demonstrating that the social learning elements of differential association, differential reinforcement,

definitions, and imitations, singularly or in combination, have greater effects on substance use, delinquency, and other deviant behavior than do elements of bonding theory (Akers, 1992; Benda & DiBlasio, 1991; Dembo et al., 1986; Elliott et al., 1985; McGee, 1992; White et al., 1987). These studies show that one or the other of elements of the social learning theory is the best predictor of adolescent substance use in America. The present study shows the same findings hold true in Korea.

Adolescent alcohol and tobacco use are moderately associated with gender, school type, and family income in this study. Gender differentiation has negative effects on depressant use and no effects on stimulants in OLS multiple analyses. Inconsistent with the findings conducted in the United States, females were more likely to use depressants, stimulants, and tranquilizers than males. It is caused that females can get those drugs very easily in drug stores without a doctor's prescription and that females are more likely to use them for medical purpose such as menstrual cramps and stomach aches. Nonetheless, the social, psychological processes by which both boys and girls come to use substance are apparently the same in both societies.

Substance use also differs by school type. Compared with students in liberal high school, greater proportions of industrial students used substances. Industrial students were much more likely to use tobacco than liberal students and much more likely to use it daily. It may be that since industrial school students have less pressure on them to study hard for entering college or

university, so that they have much more time to relax and get involved with peers who use substances than liberal school students have.

Another interesting finding is that depressant use by adolescents is extremely higher than marijuana use and even than tobacco use in Korea compared with depressant use in the United States. This may also result from the easier availability of depressants in Korean society. In addition, the vast majority of students did not report the use of stimulants, tranquilizers, inhalants, or marijuana. Nobody used other hard drugs such as LSD, cocaine, and narcotics. Korean society does experience social problems related to adolescent drug use, but they are not yet as serious as in the United States.

The second issue addressed is the relative influence of parents and peers on adolescent substance use. The regression analyses indicated that adolescents, regardless of drug use behavior, generally reported stronger influence of peers than parents. According to Kandel's arguments (1987), the influence of parents as definers and modelers are strongest at the early stage of drug involvement. Once the use of drug has begun, peer association is the dominant mode of social influence. On the other hand, Glynn (1981) argued that peer influence appeared substantially greater than parent influence in marijuana use; and parental influence appeared to be stronger where illicit drugs other than marijuana are concerned. Dishion and Loeber (1985) have found that users of illegal drugs exhibited greater identification with deviant peers, whereas users of alcohol and tobacco reported greater identification with parents. However, this study presented here identified peer effects to be the most significant influence

on licit drugs as well as illicit drugs. A number of previous studies have obtained similar results (Agnew, 1991; Flay et al., 1994; McGee, 1992).

Although this study identified peer influence was greater than parent influences, parental variables had direct and indirect effects through peer association on substance use. Parental supervision was associated directly with alcohol and tobacco use, and mother's and father's use were directly related with stimulant use. However, parental variables were mainly associated indirectly through peer association on substance use. Peer association was the strongest and direct effect upon each substance use; and the total effects of parent's variables on substance use were generally less than half the size of the total effects of peer influences. This result also supported the social learning theory that parental influences were only greater influence indirectly through peer use than their influences were directly associated with adolescent drug use suggested by the social bonding theory. These results are generally similar with a number of previous studies conducted in the United States (Bahr et al., 1993; Brown et al., 1993; Dishion et al., 1991; Elliott et al, 1985; Hoffman, 1993; Melby et al., 1993; and Warr, 1993a).

This study gave a clear answer about whether theories are developed and tested in western societies capable of accepting for adolescent deviance in Asian societies; and whether they are culture-bounded theories that need to be substituted or modified in Asian societies. Although Korean society, where the stability and authority of family is greater than western societies are, was assumed that parents played more important role than peers did on using

substances, peer influence was greater than parents influence on adolescent substance use as suggested by social learning theory. In terms of testing three theoretical models in Korea, this research provided considerable support for social learning theory, so that peer association factors are the strongest effects on substance use. Thus, this study contributes to social learning theory is the best predictor on substance use and deviant behaviors and social bonding and self-control theories will be modified in Korean society. That is, this study has resulted in the further support for what appears to be a powerful tool to understand substance use. It has also provided an indication that social learning theory is a far better tool for conducting these investigations than either a social bonding theory, or self-control theory regarding adolescent drug use in Korea. Further research related to substance use as well as deviant behaviors might be much more devoted to social learning theory as a general theory of crime in Korea.

## Limitations of the Study

The present research has some obvious limitations. First, the analysis is based only on Korean adolescents in Pusan, a metropolitan area. These may be considerable differences in adolescent drug use in urban and rural areas. Additional research is needed to assess the extent to which these findings would apply to adolescents in non-metropolitan areas in Korea. However, the sample in this study displayed frequencies and patterns of substance use by Korean adolescents similar to those obtained by previous Korean research that included rural areas.

It is also important to consider the implications of restricting this analyses to only those adolescents enrolled in schools, and not those adolescents who have dropped out and kicked out of school. It is fair to assume that adolescents who are kicked out of schools or incarcerated are more likely to use drugs. For this reason, there remains a need for further research on this topic to include adolescents not enrolled in schools.

Second, the data in this study are cross-sectional and causal models are tested. Potential limitation of cross-sectional data concerns the inability to specify the changes in measures as a youth moves through adolescence. A study which collects its dependent and independent variables at the same time has an inherent difficulty in assessing a causal direction when explaining relationships. The temporal ordering is not clearly ascertainable in cross-sectional studies. The data is necessarily hampered by this fact. For example, to explain the direct and indirect effects of peer and parents on substance use, this study did not explore the patterns and prevalence of substance use during early adolescence and late adolescence. According to previous studies from the United States, parents have more impact during early adolescence while the influence of peers increase through the period. Given that parent-child relations related to substance use are a lifelong process, and that the dynamics of interpersonal relationships and issues of causal ordering within peer and families change over time, these aspects can be addressed by longitudinal study.

Third, this study is a comparative study. Given the strength of comparative study, care was taken to ensure the comparability of the measures.

However, there were some limitations of measures in the study since measures were constrained to use only variables that are available in the American studies. For this reason, several issues of variables from social bonding and self-control theories still need to provide in-depth information on various aspects of elements from the theories. For example, the finding indicated that social bonding and self-control theories produced somewhat disappointing results. The models which were statistically significant were not effective predictors of substance use, and some of the relationships were in the opposite direction to that which was hypothesized. One possible explanation for the lack of support found for social bonding and self-control theories on substance use could be that variables from those theories were less involved in all regression models than social learning variables were. Another possibility could be based on the fact that those theories are really culture-bound theories that need to be modified in Korean society. Therefore, more various variables originally based on social bonding and self-control theories that can be accepted in different kind of societies as well as Korean society, should be developed and refined as the powerful predictors of substance use.

Finally, information on adolescent substance in this study was based only on reports by the adolescents themselves. The accuracy of indirect, direct, and relative influences of peer and parents rests also on statements by the parents. Parents and children may perceive their situations quite differently. Therefore, data are needed for both parents and children regarding these relations to

understand how parents and peer relations are experienced from the point of view of both parents and child.

## Future Research Implications

Future research, utilizing the theoretical frameworks presented in this study, should include a broader population rather than just one metropolitan area in Korea. A preferred strategy would be to have a number of schools in both urban and rural areas. This study included only urban students. Consequently, this research may be generalizable only to those students in metropolitan area, Pusan and has limited application to adolescents in non-metropolitan and rural areas in Korea. The comparisons between rural and urban adolescents will allow for insight into the nature and extent of youthful drug use patterns.

Furthermore, future research should include students who have dropped out of school, are incarcerated or under some kinds of supervision. Although classroom sampling gives researchers easy access to respondents for this type of study, there is the problem, as in this study, that no respondents from arrested, incarcerated, or drop-out populations were sampled. Thus, the most serious drug abusers are probably excluded. Future research should test social learning, bonding, and self-control theories in samples that include the most deviant adolescents who have used drugs the most frequently as well as the general population of users and non-users.

Future research should collect longitudinal data using a panel study format, with data collection beginning preferably early in the middle school years

of the subjects. Longitudinal data on a yearly schedule would present a far better opportunity to identify cohort effects, period effects, and various other extraneous influences that need to be accounted for, and would promise to provide more information when drug using behaviors and definitions are learned. Longitudinal data also would permit dynamic analyses of the formation and dissolution of friendships and peer groups, and the reciprocal effects between peers and family.

Future research should include a broader range of age groups than those surveyed in the present study. Although adolescent drug use has been viewed primarily as a peer-related phenomenon, a number of research has argued that age differences are apparent. Some scholars have found that substance use increases significantly as youngers become older (Coombs & Landsverk, 1988), whereas others have observed that the probability of initiating any form of drug use increased up to a certain age and then decreased (Esbensen & Elliott, 1994; Labouvie, 1996; White et al., 1986). On the other hand, Akers (1998) argued that age effects on delinquency behavior are indirect, operating through the social learning process. The impact of age is mediated by other social learning variables, especially peer association variables. Although this study identified that peer association variables were the most powerful predictor substance use by both $10^{th}$ and $11^{th}$ high school students in Korea, further research is needed to see how much this applies to a broader range of age groups.

Additional studies are also needed to study the seemingly all-important role of peer association variables more thoroughly, and how it merges with the

roles of other variables. More studies are needed on the dynamics of peer influence, since they may vary according to the nature of the peer relationships and the kinds of drug use and attitudes exhibited by the peers. And with peers apparently being so important in this study, future research needs to do better at identifying the causes of friendship selection and how family, religion, and school simultaneously influence peer associations and modify peer influences.

Finally, future research should provide more precise comparative study than this study has done, using the same questionnaire in both Korean and American target populations at the same point in time. Although translation is a very difficult process in cross-national research and requires special considerations, it is assumed that only comparative study can contribute to an understanding of the cultural differences and cross-validation involved (Lee and Haas, 1993), and extend our knowledge about adolescent substance use.

## The Policy Implications

This study has several policy implications. The most important implication is that adolescents' substance use should be viewed not as a behavior resulting from weak-bonds to society or lack of self-control committed by a few deviant adolescents, but instead as behaviors at the end of a continuum of learned activities, which are engaged in by peer groups or by significant others. Substance use is learned through interaction with peers and significant others. Thus, this study supports the contention that drug use prevention efforts which focus on peer influence may be more effective than mere "knowledge transfer" programs. The study suggests that peer interventions which focus more on

altering perceptions concerning the number of friends who actually use drugs are likely to be more effective than programs which focus on increasing the amount of drug information shared among friends.

The results of this study suggest the importance of education. The direct and indirect effects of peer association are noteworthy, and the school is once again identified as a critical arena through which peer associations are maintained and reinforced, in Korea as in America. Programs that attempt to break the association with peers who are using drugs in school appear to be particularly important at school ages. Thus, this study provides support for those involved in prevention, intervention, and response strategies which bolster positive peer influence on drug use in Korea. The kinds of programs that are effective in the United States are also likely to be effective in Korea.

Second, positive parents' factors toward their children could prevent them from connecting with drug using peers, although the peer group variables are considerably more powerful predictors of adolescent substance use. Parents discourage substance use by their children both directly and through its impact on peer-related factors, especially the choice of non-drug using friends. That is, parents can prevent their children from engaging in drug-using friends. Therefore, this study supports parental factors, including not using drugs by parents, effective parenting skills, parental supervision, warmth, affection, and love. Even though adolescent's substance use has come to be viewed primarily as peer-related phenomenon, parents' drug use and parental supervision also play an important role in this process. Thus, this study would hopefully allow the

design of effective prevention and intervention programs aimed at family and peer group environments as an alternative to current campaigns against drug consumption by adolescents.

Third, although much of research has investigated social learning and social bonding theory both separately and in combination in the United States, this research is the first to integrate the concepts of social learning, social bonding, and self-control theories in Korea. There is an absence of research to evaluate competing criminological theories on adolescent substance use in Korea. In Korea, most research has been largely limited to descriptive reports that deal with incidence and prevalence of substance use and ignored theoretical questioned. Thus, the present research is the first study to test three major theoretical models and makes important contributions toward the further utilization of social learning in investigating many of the damaging forms of social deviance which exist in Korean society.

# APPENDIX A
# HIGH SCHOOLS FROM 16 DISTRICTS IN PUSAN, KOREA

| District | Boys' High School | Boys' Industrial School | Girls' High School | Girls' Industrial School | Total |
|---|---|---|---|---|---|
| (1) **Kangseu** | Daejea, Dukmoon Kangseu | ---------- | Seakang | Pusansi, Keungil Seu | 7 (5.1%) |
| (2) **Keumjung** | Beuniyeal, Jisan, Yaesool, Beuniyae Sadae, Namsan, Naesung, | Daejin, Jeunja | Beuniyeal, Keumjung, Dongrae | Taekwang, Dongrae Jungbo, Sinsung | 16 (11.8%) |
| (3) **Nam** | Jungang, Dongchun, Baejung, Daeyeun | Sungjee, Dongmyung, Daeyang, Pukong | Yaemoon, Munhyun | Munhyun, Daeyeun, Baejung | 13 (9.6%) |
| (4) **Dong** | Pusan, Keumsung | Kongyae | Kyoungnam, Daeraesa | Sunhwa, Dizain | 7 (5.1%) |
| (5) **Dongrae** | Sajik, Youngin, Chungyeul, Dongin, Keumjung, Dongrae | Wonyae, | Jungang, Sajik Haksan, Haehwa, Daemyung | Dongrae | 13 (9.6%) |
| (6) **Jin** | Keungwon, Jin, Kaya, Kaekeum, Yangjung, Dong, Dongsung, Yangun, Kyoungwon, kukjae, Kwahak, Puheung | Keungnam, Dongyae, Jungbo, Pusang | Jin, Sungmo | Jin, Dongpyung, Donghe, Dukmyung | 22 (16.2%) |
| (7) **Puk** | Sungdo, Nakdong | ---------- | Kyounghae | Jungbo | 4 (2.9%) |
| (8) **Sasang** | Kooduk | Seapusan | Joorae, Daeduk | Dongwon | 5 (3.7%) |
| (9) **Saha** | Keunkuk, Daedong Haedong, Donga, Puilwaekukeu, Dadae | Pooil, Donga Daekwang | Pusan, Sungil, Samsung | Kyunghee | 13 (9.6%) |
| (10) **Seu** | Kyungnam, | Kyungnam, Kwangsung | Seu | Jungbodizain | 5 (3.7%) |
| (11) **Sooyoung** | Namil | ---------- | Dong, Dukmoon | Pusan | 4 (2.9%) |
| (12) **Yeunjae** | Waekukeu | ---------- | Yeesabel | Kaesung | 3 (2.2%) |
| (13) **Youngdo** | Kwangmyung, Nam | Cheyouk, Haesa | Youngdo | Youngdo, Nam | 7 (5.1%) |
| (14) **Joong** | Haekwang | Deukwon | Namsung | Dongjoo | 4 (2.9%) |
| (15) **Haeyun--dae** | Haeyundae, Sindo | Haeyoundae, Kikae Dongsin | Haeyoundae | Sungsim, Handook, Haeyoundae | 9 (6.6%) |
| (16) **Kijang** | Kijang, Jaeil | Sion, Jangan | ---------- | ---------- | 4 (2.9%) |
| Total | 53 (39%) | 26 (19.1%) | 28 (20.6%) | 29(21.3%) | 136 (100%) |

APPENDIX B

DESCRIPTIVE STATISTICS ON LIFE TIME SUBSTANCE USE BY KOREAN ADOLESCENTS(%)

| Variables | (1) Never | (2) Once or twice | (3) Several, several times | (4) Occasionally, less than once a month | (5) Monthly, once or twice a month | (6) Weekly, at least once a week, but not everyday | (7) Daily, Everyday or nearly everyday | Mean |
|---|---|---|---|---|---|---|---|---|
| Alcohol | 15.3 | 22.3 | 25.1 | 13.8 | 14.8 | 7.7 | 0.9 | 3.17 |
| Tobacco | 53.7 | 11.5 | 7.3 | 1.8 | 2.2 | 4.9 | 18.7 | 2.77 |
| Depressants | 44.8 | 17.3 | 16.9 | 13.6 | 6.6 | 0.8 | --- | 2.22 |
| Stimulants | 95.5 | 2.6 | 1.6 | 0.3 | 0.1 | --- | --- | 1.07 |
| Tranquilizers | 97.3 | 2.0 | 0.5 | --- | 0.2 | --- | --- | 1.04 |
| Inhalants | 98.3 | 1.2 | 0.4 | 0.1 | --- | --- | --- | 1.02 |
| Marijuana | 99.8 | 0.2 | --- | --- | --- | --- | --- | 1.00 |
| Other Drugs | --- | --- | --- | --- | --- | --- | --- | 1.00 |

APPENDIX C
ZERO-ORDER CORRELATION MATRIX OF INDEPENDENT VARIABLES FOR ALCOHOL USE

| VAR. | POND | PROD | LAVD | NEUD | DIPA | FAU | MOU | PENQ | PANQ | PARE | FRRE | UEFU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POND | 1.00 | | | | | | | | | | | |
| PROD | -.20** | 1.00 | | | | | | | | | | |
| LAVD | -.12** | .30** | 1.00 | | | | | | | | | |
| NEUD | .15** | -.36** | -.11** | 1.00 | | | | | | | | |
| DIPA | .29** | -.14** | -.07* | .20** | 1.00 | | | | | | | |
| FAU | .08* | -.04 | -.08** | .07* | .14** | 1.00 | | | | | | |
| MOU | .12** | -.08* | -.13** | .06* | .12** | .32** | 1.00 | | | | | |
| PENQ | .57** | -.20** | -.12** | .18** | .40** | .10** | .12** | 1.00 | | | | |
| PANQ | .29** | -.10** | -.06 | .11** | .08* | .14** | .28** | .27** | 1.00 | | | |
| PARE | .24** | -.11** | -.12** | .12** | .19** | .08* | .22** | .27** | .38** | 1.00 | | |
| FRRE | .24** | -.08* | -.02 | .17** | .33** | .06 | .10** | .27** | .17** | .25** | 1.00 | |
| UEFU | .35** | -.14** | -.11** | .19** | .33** | .06 | .15** | .38** | .16** | .26** | .35** | 1.00 |
| FODE | .02 | -.07* | -.03 | .01 | .02 | .00 | -.05 | -.03 | .04 | .02 | -.01 | -.02 |
| RECO | .34** | -.17** | -.10** | .21** | .36** | .02 | .09** | .38** | .13** | .27** | .33** | .46** |
| IMPE | .18** | -.17** | -.09** | .33** | .40** | .08* | .08* | .26** | .06 | .10** | .28** | .30** |
| IMPA | .19** | -.18** | -.08** | .30** | .42** | .07* | .08* | .27** | .03 | .09** | .26** | .28** |
| IMOA | .16** | -.16** | -.07* | .29** | .40** | .09** | .08* | .24** | .05 | .05 | .26** | .27** |
| IMAD | .15** | -.16** | -.05 | .27** | .40** | .08* | .08* | .25** | .03 | .05 | .26** | .28** |
| SCAT | -.01 | .21** | .26** | -.07* | -.14** | .03 | -.01 | -.07* | .01 | .01 | -.02 | -.06 |
| PAAT | -.06* | .16** | .20** | -.14** | -.12** | .04 | -.05 | -.12** | .02 | -.00 | -.06* | -.09** |
| PEAT | .05 | .14** | .08* | -.02 | .06* | -.00 | .01 | .01 | .00 | .05 | .07* | .08* |
| PASU | -.10** | .13** | .22** | -.09** | -.14** | -.06 | -.04 | -.16** | .02 | -.00 | -.14** | -.17** |
| REAT | -.03 | .04 | .43** | -.07* | -.02 | -.12** | -.10** | -.07* | -.02 | -.02 | .00 | -.04 |
| EDCO | -.04 | .15** | .20** | -.03 | -.20** | .00 | -.01 | -.11** | -.01 | -.05 | -.05 | -.09** |

| VAR. | POND | PROD | LAVD | NEUD | DIPA | FAU | MOU | PENQ | PANQ | PARE | FRRE | UEFU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCAS | -.00 | .12** | .12** | -.04 | -.03 | .03 | .01 | -.01 | -.01 | -.01 | -.01 | -.02 |
| GPA | -.03 | .07* | .07* | -.10** | -.15** | -.00 | .07* | -.08* | .03 | .02 | -.07* | -.04 |
| EDIN | -.08** | .08* | .13** | -.02 | -.21** | -.07* | -.05 | -.12** | .01 | -.04 | -.10** | -.08* |
| BELE | -.07* | .28** | .59** | -.11** | -.07* | .01 | -.06 | -.07* | -.03 | -.07* | .03 | -.11** |
| BERE | -.08* | .13** | .76** | -.06* | -.05 | -.11** | -.10** | -.10** | -.06 | -.08* | -.02 | -.05 |
| BEPA | -.12** | .23** | .71** | -.07* | -.05 | -.06 | -.11** | -.07* | -.03 | -.10** | -.04 | -.09** |
| IMPU | .08** | -.04 | -.01 | .18** | .12** | .05 | .01 | .12** | .02 | .07* | .20** | .15** |
| SITA | .06* | -.02 | -.05 | .07* | .04 | .02 | .02 | .08* | -.01 | -.01 | .14** | .08* |
| RISE | .14** | -.13** | -.07* | .24** | .23** | -.00 | .10** | .21** | .08** | .12** | .20** | .19** |
| PHAC | .06* | -.05 | -.01 | .14** | .20** | .04 | .04 | .12** | .07* | .08** | .18** | .18** |
| SECE | .03 | -.07* | -.02 | .02 | .02 | -.01 | -.02 | .05 | .02 | .07* | .05 | .07* |
| LOTO | .02 | -.04 | -.02 | .09** | .15** | .05 | -.04 | .11** | .00 | .02 | .10** | .07* |

* P< .05
* *P< .01

| VAR. | FODE | RECO | IMPE | IMPA | IMOA | IMAD | SCAT | PAAT | PEAT | PASU | REAT | EDCO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FODE | 1.00 | | | | | | | | | | | |
| RECO | -.02 | 1.00 | | | | | | | | | | |
| IMPE | -.02 | .30** | 1.00 | | | | | | | | | |
| IMPA | -.05 | .28** | .79** | 1.00 | | | | | | | | |
| IMOA | -.05 | .26** | .77** | .83** | 1.00 | | | | | | | |
| IMAD | -.06 | .27** | .75** | .82** | .93** | 1.00 | | | | | | |
| SCAT | -.05 | -.11** | -.13** | -.18** | -.14** | -.14** | 1.00 | | | | | |
| PAAT | .05 | -.08** | -.15** | -.15** | -.14** | -.15** | .34** | 1.00 | | | | |
| PEAT | -.01 | .07* | -.00 | -.07* | -.04 | -.04 | .30** | .42** | 1.00 | | | |
| PASU | -.00 | -.11** | -.19** | -.18** | -.20** | -.16** | .22** | .37** | .18** | 1.00 | | |
| REAT | .00 | -.03 | .00 | .02 | .01 | .02 | .04 | .04 | -.01 | .07* | 1.00 | |
| EDCO | .06 | -.10** | -.20** | -.25** | -.22** | -.20** | .46** | .24** | .20** | .20** | .06 | 1.00 |
| OCAS | -.02 | -.02 | -.05 | -.07* | -.04 | -.06 | .39** | .20** | .20** | .08* | .03 | .44** |
| GPA | .02 | -.02 | -.14** | -.16** | -.13** | -.14** | .19** | .11** | -.00 | .09** | .02 | .24** |
| EDIN | .07* | -.12** | -.15** | -.18** | -.18** | -.16** | .28** | .15** | .09** | .21** | .13** | .43** |
| BELE | -.02 | -.07* | -.09** | -.13** | -.11** | -.11** | .25** | .16** | .12** | .14** | .06* | .19** |
| BERE | -.02 | -.07* | -.06 | -.02 | .01 | .01 | .11** | .05 | -.01 | .12** | .58** | .12** |
| BEPA | -.01 | -.07* | -.06 | -.05 | -.06 | -.03 | .22** | .24** | .09** | .22** | .15** | .12** |
| IMPU | -.00 | .15** | .28** | .24** | .23** | .24** | -.01 | -.04 | .03 | -.08** | -.02 | -.08** |
| SITA | .03 | .00 | .14** | .12** | .13** | .11** | -.15** | -.14** | -.09** | -.14** | -.08* | -.13** |
| RISE | .05 | .17** | .29** | .28** | .29** | .28** | -.05 | -.14** | .01 | -.14** | -.01 | -.09** |
| PHAS | -.06 | .13** | .27** | .28** | .26** | .26** | -.01 | .06 | .08* | -.06* | .01 | -.11** |
| SECE | .04 | .05 | .08* | .12** | .10** | .11** | -.05 | .01 | -.13** | -.05 | -.02 | -.05 |
| LOTO | .02 | .08** | .24** | .24** | .23** | .22** | -.09** | -.07* | -.11** | -.12** | .02 | -.12** |

* P< .05
* *P< .01

| VAR. | OCAS | GPA | EDIN | BELE | BERE | BEPA | IMPU | SITA | RICE | PHAC | SECE | LOTO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCAS | 1.00 | | | | | | | | | | | |
| GPA | .06* | 1.00 | | | | | | | | | | |
| EDIN | .10** | .25** | 1.00 | | | | | | | | | |
| BELE | .16** | .07* | .12** | 1.00 | | | | | | | | |
| BERE | .01 | .03 | .12** | .14** | 1.00 | | | | | | | |
| BEPA | .10** | .05 | .03 | .23** | .29** | 1.00 | | | | | | |
| IMPU | -.00 | -.18** | -.12** | -.04 | .00 | .00 | 1.00 | | | | | |
| SITA | -.06* | -.14** | -.18** | -.09** | .00 | -.04 | .25** | 1.00 | | | | |
| RISE | -.07* | -.07* | -.12** | -.09** | .00 | -.09** | .35** | .08* | 1.00 | | | |
| PHAC | .01 | -.12** | -.11** | -.06* | .00 | .03 | .30** | .10** | .30** | 1.00 | | |
| SECE | -.02 | -.01 | -.06 | -.06 | .01 | -.01 | .16** | .22** | .12** | .05 | 1.00 | |
| LOTO | -.03 | -.11** | -.10** | -.08** | -.01 | .03 | .20** | .19** | .18** | .20** | .25** | 1.00 |

* P< .05
* *P< .01

POND = positive/negative definitions
PROD = proscriptive definitions
LAVD = law abiding/violating definitions
NEUD = neutralizing definitions
DIPA = differential peer association
FAU = father's use
MOU = mother's use
PENQ = peer norm qualities
PANQ = parents' norm qualities
PARE = parents' reaction
FRRE = friends' reaction
UEFU = usual effects of use
FODE = formal deterrence
RECO = rewards-costs of use
IMPE = imitation of peers
IMPA = imitation of parents
IMOA = imitation of other adults
IMAD = imitation of advertisements
SCAT = school attachment
PAAT = parental attachment
PEAT = peer attachment
PASU = parental supervision
REAT = religious attachment
EDCO = educational aspirations
OCAS = occupational aspirations
GPA = grade point average

EDIN = educational involvement
BELE = belief in legal norms
BERE = belief in value of religion
BEPA = belief in parental norms
IMPU = impulsivity
SITA = preference for simple tasks
RISE = risk seeking
PHAC = preference for physical activity
SECE = self-centered
LOTO = low tolerance

APPENDIX D

OLS REGRESSION MODELS OF ALCOHOL USE BY LIBERAL HIGH SCHOOL STUDENTS

| Variable | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Socio-Demographic Var. | | | | | |
| sex | .044 | | .082 | .030 | .046 |
| grade level | .048 | | .031 | .049 | .049 |
| family structure | .015 | | .021 | .018 | .014 |
| family income | .104** | | .184*** | .102** | .110** |
| parents SES | -.014 | | -.020 | -.031 | -.008 |
| Social Learning Var. | | | | | |
| positive/negative definitions | .016 | .029 | | .030 | .016 |
| proscriptive definitions | .014 | .019 | | .009 | .011 |
| law abiding/violating definitions | --- | --- | | -.028 | --- |
| neutralizing definitions | .037 | .038 | | .038 | .039 |
| differential peer association | .413*** | .413*** | | .410*** | .414*** |
| father's use | .067 | .067 | | .072* | .064 |
| mother's use | .025 | .023 | | .016 | .025 |
| peer norm qualities | .107* | .111* | | .099* | .114** |
| parents' norm qualities | -.071 | -.072 | | -.080* | -.069 |
| parents' reaction | -.030 | -.027 | | -.042 | -.030 |
| friends' reaction | .077* | .070 | | .082* | .075* |
| usual effects of use | .030 | .037 | | .041 | .034 |
| formal deterrence | .004 | .005 | | .002 | .004 |
| rewards-costs of use | .088* | .094* | | .092* | .089* |
| imitation of peers | -.010 | .006 | | -.014 | -.010 |
| imitation of parents | .034 | .043 | | .049 | .038 |
| imitation of other person | -.031 | -.074 | | -.034 | -023 |
| imitation of advertisement | .166 | .191* | | .167 | .167 |

* p< .05
** p< .01
*** p< .001

| Variable | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Social Bonding Var. | | | | | |
| school attachment | -.024 | -.031 | -.093 | | -.013 |
| parental attachment | .042 | .041 | .012 | | .045 |
| peer attachment | .045 | .051 | .093* | | .043 |
| parental supervision | -.078* | -.074* | -.156** | | -.078* |
| religious attachment | -.045 | -.030 | -.026 | | -.041 |
| educational aspirations | .042 | .058 | .030 | | .041 |
| occupational aspirations | -.044 | -.055 | -.006 | | -.043 |
| grade point average | -.092* | -.094* | -.086 | | -.092* |
| educational involvement | -.062 | -.049 | -.074 | | -.062 |
| belief in legal norms | -.015 | -.021 | .009 | | -.013 |
| belief in value of religion | .035 | .020 | -.023 | | .035 |
| belief in parental norms | -.027 | -.026 | -.070 | | -.031 |
| Self-Control Var. | | | | | |
| impulsivity | .031 | .036 | .065 | .042 | |
| preference for simple tasks | -.052 | -.051 | -.064 | -.032 | |
| risk seeking | .044 | .061 | .164*** | .054 | |
| preference for physical activity | -.017 | -.022 | .050 | -.002 | |
| self-centered | .028 | .027 | .012 | .014 | |
| low tolerance | .001 | .006 | .057 | .000 | |
| $R^2$ | .556 | .543 | .205 | .533 | .551 |
| $R^2$ Change | | .013 | .351 | .023 | .005 |
| N | 488 | 488 | 525 | 489 | 488 |

* p< .05
** p< .01
*** p< .001

APPENDIX E

OLS REGRESSION MODELS OF ALCOHOL USE BY INDUSTRIAL HIGH SCHOOL STUDENTS

| Variable | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Socio-Demographic Var. | | | | | |
| sex | .080* | | .197*** | .079* | .085* |
| grade level | -.036 | | -.010 | -.041 | -.037 |
| family structure | .034 | | .013 | .029 | .030 |
| family income | .047 | | .112* | .048 | .049 |
| parents SES | .009 | | .038 | .004 | .009 |
| Social Learning Var. | | | | | |
| positive/negative definitions | .057 | .047 | | .061 | .059 |
| proscriptive definitions | -.030 | -.029 | | -.044 | -.020 |
| law abiding/violating definitions | --- | --- | | -.006 | --- |
| neutralizing definitions | -.030 | -.038 | | -.036 | -.014 |
| differential peer association | .520*** | .536*** | | .538*** | .523*** |
| father's use | .058 | .055 | | .056 | .056 |
| mother's use | .018 | .013 | | .010 | .016 |
| peer norm qualities | -.007 | -.015 | | -.013 | -.012 |
| parents' norm qualities | -.018 | -.003 | | -.019 | -.018 |
| parents' reaction | .099** | .098** | | .107** | .103** |
| friends' reaction | -.012 | .001 | | -.006 | .001 |
| usual effects of use | .102** | .102** | | .099** | .106** |
| formal deterrence | -.024 | -.025 | | -.032 | -.019 |
| rewards-costs of use | .049 | .047 | | .043 | .058 |
| imitation of peers | -.018 | -.015 | | -.019 | -.006 |
| imitation of parents | .078 | .069 | | .082 | .079 |
| imitation of other person | .147 | .154 | | .161 | .123 |
| imitation of advertisement | -.026 | -.016 | | -.035 | .001 |

* p< .05
** p< .01
*** p< .001

| Variable | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Social Bonding Var. | | | | | |
| school attachment | -.013 | -.006 | -.029 | | -.011 |
| parental attachment | -.016 | -.016 | -.156** | | -.006 |
| peer attachment | .002 | .011 | .123* | | .000 |
| parental supervision | .021 | .020 | .001 | | .027 |
| religious attachment | .016 | .015 | -.027 | | .020 |
| educational aspirations | .015 | .011 | -.047 | | .021 |
| occupational aspirations | -.010 | -.003 | .036 | | -.011 |
| grade point average | -.076* | -.085* | -.123** | | -.082* |
| educational involvement | -.022 | -.016 | -.173*** | | -.022 |
| belief in legal norms | .002 | -.001 | -.080 | | .005 |
| belief in value of religion | .026 | .018 | .074 | | .024 |
| belief in parental norms | -.046 | -.043 | -.083 | | -.050 |
| Self-Control Var. | | | | | |
| impulsivity | .087* | .080* | .107* | .093** | |
| preference for simple tasks | -.025 | -.037 | -.060 | -.015 | |
| risk seeking | -.002 | .005 | .088 | .005 | |
| preference for physical activity | .045 | .053 | .149*** | .040 | |
| self-centered | -.012 | -.009 | -.033 | -.016 | |
| low tolerance | .004 | .008 | .044 | .010 | |
| $R^2$ | .653 | .645 | .270 | .644 | .643 |
| $R^2$ Change | | .008 | .383 | .009 | .010 |
| N | 414 | 414 | 468 | 414 | 414 |

* p< .05
** p< .01
*** p< .001

APPENDIX F

DESCRIPTIVE STATISTICS ON SUBSTANCE USE BETWEEN FATHERS AND MOTHERS

| | Fathers (%) | | | | | Mothers (%) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (0) Never, | (1) Occasionally, Up to less than once a month | (2) Monthly, Once or twice a month | (3) Weekly, at least once a week | (4) Daily, Everyday or nearly everyday | (0) Never, | (1) Occasionally, Up to less than once a month | (2) Monthly, Once or twice a month | (3) Weekly, at least once a week | (4) Daily, Everyday or nearly everyday | t-value |
| Alcohol | 10.0 | 25.2 | 21.6 | 34.0 | 9.1 | 37.9 | 46.4 | 10.8 | 3.8 | 1.0 | 30.9*** |
| Tobacco | 30.9 | 3.8 | 2.2 | 7.0 | 56.1 | 96.5 | 1.1 | 0.1 | 2.3 | --- | 39.2*** |
| Depressants | 72.6 | 23.5 | 2.7 | 0.6 | 0.5 | 62.5 | 30.1 | 6.0 | 1.3 | --- | -5.9*** |
| Stimulants | 98.2 | 1.6 | 0.1 | 0.1 | --- | 98.5 | 1.3 | 1.1 | 1.1 | --- | 0.5 |
| Tranquilizers | 97.7 | 2.1 | 0.1 | 0.1 | --- | 97.0 | 2.8 | 0.1 | 0.1 | --- | -0.9 |
| Inhalants | 100.0 | --- | --- | --- | --- | 100.0 | --- | --- | --- | --- | --- |
| Marijuana | 100.0 | --- | --- | --- | --- | 100.0 | --- | --- | --- | --- | --- |
| Other Drugs | 99.9 | 0.1 | --- | --- | --- | 100.0 | --- | --- | --- | --- | --- |

* p< .05
** p< .01
*** p< .001

APPENDIX G
THE QUESTIONNAIRE INSTRUMENT

SURVEY OF ADOLESCENT BEHAVIOR IN KOREA

Conducted by

Sunghyun Hwang

of the

Department of Sociology

University of Florida

TO THE STUDENT

I would like for you to fill out the attached questionnaire. The questions ask about your feelings, activities, and behavior regarding tobacco, alcohol, and other substances.

Do not put your name anywhere on this form. All answers will be kept in strictest confidence. Your participation is completely voluntary.

In order to do the study right we need to have as many students as possible take the questionnaire.

INSTRUCTIONS

This is not a test. There are no right or wrong answers. Simply answer the questions honestly. Please do not exaggerate or conceal.

There are two main types of questions. For some questions you answer by placing a check ( ✓ ) or ( X ) by the answer which comes closest to being true for you.

EXAMPLE: My favorite rock group or singer is:

_____ H.O.T.

__✓__ SES

_____ PINKLE

For almost all questions you check one answer. There are three questions where you may check more than once. They are clearly marked: (please check all that apply). In every other question you check only one answer.

For some questions you answer by placing a check under the answer which comes closest to being true for you with regard to each of the items listed on the left.

EXAMPLE: How often do you listen to the records of the following?

| | Never | Seldom | Often | Very Often |
|---|---|---|---|---|
| H.O.T | ✓ | | | |
| SES | | | | ✓ |
| PINKLE | | | ✓ | |

Please try to answer all of the questions. If you have any trouble with any of the questions, please raise your hand and I will be glad to help you. Do not rush through the questions but also do not spend too much time on any single question.

THANK YOU FOR YOUR COOPERATION. I HOPE YOU WILL ENJOY FILLING OUT THE QUESTIONNAIRE.

PART I

I would like to know some background information about you.

(Check only one answer for each question.)

1. What is your sex ?
   _____ (1) Male
   _____ (2) Female

2. What is your grade level in school ?
   _____ (1) 10th
   _____ (2) 11th

3. What is your grade average in class ?
   _____ (1) $1^{th} - 10^{th}$
   _____ (2) $11^{th} - 20^{th}$
   _____ (3) $21^{th} - 30^{th}$
   _____ (4) $31^{th} - 40^{th}$
   _____ (5) below $41^{th}$

4. How far do you expect to go in school?
   _____ (1) I do not expect to finish high school
   _____ (2) I expect to finish high school only
   _____ (3) I expect some college training
   _____ (4) I expect to graduate from a 4-year college
   _____ (5) I expect to get an advanced degree after graduating from college

5. How much of your time would you say is taken up by studying each day after school?
   _____ (1) None at all
   _____ (2) Less than one hour
   _____ (3) One - two hours
   _____ (4) Two - three hours
   _____ (5) Three - four hours
   _____ (6) Over four hours

6. With whom do you live ?
   _____ (1) Biological father and mother
   _____ (2) Father and step-mother
   _____ (3) Mother and step-father
   _____ (4) Father only
   _____ (5) Mother only
   _____ (6) Without parents

7. How much is your family income per month ?
   _____ (1) Below 500,000 Won
   _____ (2) 500,000 – 1,000,000 Won
   _____ (3) 1,000,000 – 1,500,000 Won
   _____ (4) 1,500,000 – 2,000,000 Won
   _____ (5) 2,000,000 – 3,000,000 Won
   _____ (6) Above 3,000,000 Won

8. What is the occupation of your father in your home ?
   _____ (1) Unemployed
   _____ (2) Manufacturing, farming, fishing, mining (unskilled-laborers, service workers, practical worker, waiters, laborers, other)
   _____ (3) Manufacturing, farming, fishing, mining (semi-skilled workers, salesmen, operatives, other)
   _____ (4) Manufacturing, farming, fishing, mining (skilled-workers, retail owners, craftsmen, foremen, other)
   _____ (5) Officials (salaried men, bank clerks, officials, other)
   _____ (6) Technical workers (engineers, architects, teachers, nurses, other)
   _____ (7) Managers (department heads, proprietors, Federal and local public administrations, other)
   _____ (8) Professional workers (doctors, lawyers, professors, researchers, authors, editors, reporters, etc)

9. What is the occupation of your mother in your home ?
   _____ (1) Housekeepers
   _____ (2) Manufacturing, farming, fishing, mining (unskilled-laborers, service workers, practical worker, waitress, laborers, other)
   _____ (3) Manufacturing, farming, fishing, mining (semi-skilled workers, salesmen, operatives, other)
   _____ (4) Manufacturing, farming, fishing, mining (skilled-workers, retail owners, craftsmen, foremen, other)
   _____ (5) Officials (salaried men, bank clerks, officials, other)
   _____ (6) Technical workers (engineers, architects, teachers, nurses, other)
   _____ (7) Managers (department heads, proprietors, Federal and local public administrations, other)

_____ (8) Professional workers (doctors, lawyers, professors, researchers, authors, editors, reporters, etc)

10. As far as your know how much schooling did your father complete ?
    _____ (1) None
    _____ (2) Elementary school
    _____ (3) Middle school
    _____ (4) High school
    _____ (5) College or University
    _____ (6) Graduate School

11. As far as your know how much schooling did your mother complete ?
    _____ (1) None
    _____ (2) Elementary school
    _____ (3) Middle school
    _____ (4) High school
    _____ (5) College or University
    _____ (6) Graduate School

12. What is your religious affiliation?
    _____ (1) Buddhist
    _____ (2) Protestant
    _____ (3) Catholic
    _____ (4) None
    _____ (5) Other

13. How often do you go to church or temple?
    _____ (1) Never
    _____ (2) Less than once a month
    _____ (3) About once or twice a month
    _____ (4) About once a week or more

## PART II

The following question asks you about using or not using tobacco, alcohol, and other substances. For each of the substances listed below, please check the box which comes closest to how often you have ever used it in your lifetime. (Do not count when you have used it for medical purpose)

(Check only one for each substance)

| | (1) Never Used | (2) Once or Twice | (3) Several, Several Times | (4) Occasionally, Less than Once a Month | (5) Monthly, Once or Twice a Month | (6) Weekly, at least Once a week, but not every day | (7) Every day or nearly Every day |
|---|---|---|---|---|---|---|---|
| 1. ALCOHOL | | | | | | | |
| 2. TOBACCO | | | | | | | |
| 3. DEPRESSANTS (geborin, saridon, penjal, sedaphin, nubain) | | | | | | | |
| 4. STIMULANTS (timing, night, esnanine, reglin) | | | | | | | |
| 5. TRANQUILIZERS (atiban,barium,seconal, ruminal, barbital) | | | | | | | |
| 6. INHALANTS (bond, sinna, butane-gas) | | | | | | | |
| 7. MARIJUANA | | | | | | | |
| 8. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | | | | |

If you have used any of the substances, in what grade were you when you first used it.

(Check only one for each substance)

| | (1) Never | (2) Before 7th grade | (3) 7th grade | (4) 8th grade | (5) 9th grade | (6) 10th grade | (7) 11th grade |
|---|---|---|---|---|---|---|---|
| 9. ALCOHOL | | | | | | | |
| 10. TOBACCO | | | | | | | |
| 11. DEPRESSANTS (geborin, saridon, penjal, sedaphin, nubain) | | | | | | | |
| 12. STIMULANTS (timing, night, esnanine, reglin) | | | | | | | |
| 13. TRANQUILIZERS (atiban,barium,seconal, ruminal, barbital) | | | | | | | |
| 14. INHALANTS (bond, sinna, butane-gas) | | | | | | | |
| 15. MARIJUANA | | | | | | | |
| 16. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | | | | |

For each of the substances listed below, please check the box which comes closest to how often you have used it in the past 12 months.

(Do not count when you have used it for medical purpose)

(Check only one for each substance)

| | (1) Never Used | (2) Once or Twice | (3) Several, Several Times | (4) Occasionally, Less than Once a Month | (5) Monthly, Once or Twice a Month | (6) Weekly, at least Once a week, but not every day | (7) Every day or nearly Every day |
|---|---|---|---|---|---|---|---|
| 17. ALCOHOL | | | | | | | |
| 18. TOBACCO | | | | | | | |
| 19. DEPRESSANTS (geborin, saridon, penjal, sedaphin, nubain) | | | | | | | |
| 20. STIMULANTS (timing, night, esnanine, reglin) | | | | | | | |
| 21. TRANQUILIZERS (atiban,barium,seconal, ruminal, barbital) | | | | | | | |
| 22. INHALANTS (bond, sinna, butane-gas) | | | | | | | |
| 23. MARIJUANA | | | | | | | |
| 24. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | | | | |

As far as you know, about how often do your close friends use any of the substances?

(Check only one for each substance)

| | (1) Never Used | (2) Once or Twice | (3) Several, Several Times | (4) Occasionally, Less than Once a Month | (5) Monthly, Once or Twice a Month | (6) Weekly, at least Once a week, but not every day | (7) Every day or nearly Every day |
|---|---|---|---|---|---|---|---|
| 25. ALCOHOL | | | | | | | |
| 26. TOBACCO | | | | | | | |
| 27. DEPRESSANTS (geborin, saridon, penjal, sedaphin, nubain) | | | | | | | |
| 28. STIMULANTS (timing, night, esnanine, reglin) | | | | | | | |
| 29. TRANQUILIZERS (atiban,barium,seconal, ruminal, barbital) | | | | | | | |
| 30. INHALANTS (bond, sinna, butane-gas) | | | | | | | |
| 31. MARIJUANA | | | | | | | |
| 32. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | | | | |

As far as you know, about how many of your close friends use any of the substances ?

(Check only one for each substance)

| | (1) None, or almost none | (2) Less than half | (3) More than half | (4) Almost all |
|---|---|---|---|---|
| 33. ALCOHOL | | | | |
| 34. TOBACCO | | | | |
| 35. DEPRESSANTS (geborin, saridon, penjal, sedaphin, nubain) | | | | |
| 36. STIMULANTS (timing, night, esnanine, reglin) | | | | |
| 37. TRANQUILIZERS (atiban,barium,seconal, ruminal, barbital) | | | | |
| 38. INHALANTS (bond, sinna, butane-gas) | | | | |
| 39. MARIJUANA | | | | |
| 40. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | |

As far as you know, about how often do your father use any of the substances?

(Check only one for each substance)

| | (1) Never Used | (2) Once or Twice | (3) Several, Several Times | (4) Occasionally, Less than Once a Month | (5) Monthly, Once or Twice a Month | (6) Weekly, at least Once a week, but not every day | (7) Every day or nearly Every day |
|---|---|---|---|---|---|---|---|
| 41. ALCOHOL | | | | | | | |
| 42. TOBACCO | | | | | | | |
| 43. DEPRESSANTS (geborin, saridon, penjal, sedaphin, nubain) | | | | | | | |
| 44. STIMULANTS (timing, night, esnanine, reglin) | | | | | | | |
| 45. TRANQUILIZERS (atiban,barium,seconal, ruminal, barbital) | | | | | | | |
| 46. INHALANTS (bond, sinna, butane-gas) | | | | | | | |
| 47. MARIJUANA | | | | | | | |
| 48. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | | | | |

As far as you know, about how often do your mother use any of the substances?

(Check only one for each substance)

| | (1) Never Used | (2) Once or Twice | (3) Several, Several Times | (4) Occasionally, Less than Once a Month | (5) Monthly, Once or Twice a Month | (6) Weekly, at least Once a week, but not every day | (7) Every day or nearly Every day |
|---|---|---|---|---|---|---|---|
| 49. ALCOHOL | | | | | | | |
| 50. TOBACCO | | | | | | | |
| 51. DEPRESSANTS (geborin, saridon, penjal, sedaphin, nubain) | | | | | | | |
| 52. STIMULANTS (timing, night, esnanine, reglin) | | | | | | | |
| 53. TRANQUILIZERS (atiban,barium,seconal, ruminal, barbital) | | | | | | | |
| 54. INHALANTS (bond, sinna, butane-gas) | | | | | | | |
| 55. MARIJUANA | | | | | | | |
| 56. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | | | | |

## Part III

What is your attitude toward using each of the substances?

(Check only one for each substance)

| | (1) Approve | (2) Sometimes approve and sometimes disapprove, depending on circumstances | (3) Disapprove | (4) Don't know |
|---|---|---|---|---|
| 1. ALCOHOL | | | | |
| 2. TOBACCO | | | | |
| 3. DEPRESSANTS, STIMULANTS, TRANQUILIZERS | | | | |
| 4. INHALANTS | | | | |
| 5. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | |

As far as you know, what is the attitude of your close friends toward using each of the substances?

(Check only one for each substance)

| | (1) Approve | (2) Sometimes approve and sometimes disapprove, depending on circumstances | (3) Disapprove | (4) Don't know |
|---|---|---|---|---|
| 6. ALCOHOL | | | | |
| 7. TOBACCO | | | | |
| 8. DEPRESSANTS, STIMULANTS, TRANQUILIZERS | | | | |
| 9. INHALANTS | | | | |
| 10. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | |

As far as you know, what is the attitude of your parents toward using each of the substances?

(Check only one for each substance)

| | (1) Approve | (2) Sometimes approve and sometimes disapprove, depending on circumstances | (3) Disapprove | (4) Don't know |
|---|---|---|---|---|
| 11. ALCOHOL | | | | |
| 12. TOBACCO | | | | |
| 13. DEPRESSANTS, STIMULANTS, TRANQUILIZERS | | | | |
| 14. INHALANTS | | | | |
| 15. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | |

If you have ever used it, check what has happened or usually happens to you after using each substance. If you have never used the substance, check what you think would happen if you did use it.

(Check only one for each substance)

| | (1) Mainly Goods, such as fit in better with others or feel good | (2) About as much good as bad | (3) Mainly Bad, such as get into trouble with others or get sick |
|---|---|---|---|
| 16. ALCOHOL | | | |
| 17. TOBACCO | | | |
| 18. DEPRESSANTS, STIMULANTS, TRANQUILIZERS | | | |
| 19. INHALANTS | | | |
| 20. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | |

Whether or not you have ever used it, check what your parents most likely would do if they were to find out about your using each of the substances.

If you do use it, check what they would do if they found out.

If you do not use it, check what they would do if you started and they found out about it.

(Check out one for each substances)

| | (1) Encourage your using | (2) Disapprove but do nothing | (3) Scold or punish you | (4) Kick you out of the house | (5) Turn you in to the authorities |
|---|---|---|---|---|---|
| 21. ALCOHOL | | | | | |
| 22. TOBACCO | | | | | |
| 23. DEPRESSANTS, STIMULANTS, TRANQUILIZERS | | | | | |
| 24. INHALANTS | | | | | |
| 25. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | | |

Whether or not you have ever used it, check what your friends most likely would do if they were to find out about your using each of the substances.

If you do use it, check what they would do if they found out.

If you do not use it, check what they would do if you started and they found out about it.

(Check out one for each substances)

| | (1) Become Closer Friends | (2) Encourage your using | (3) Do Nothing | (4) Criticize your using | (5) Tell your parents | (6) Stop being your friends | (7) Turn you in to the authorities |
|---|---|---|---|---|---|---|---|
| 26. ALCOHOL | | | | | | | |
| 27. TOBACCO | | | | | | | |
| 28. DEPRESSANTS STIMULANTS, TRANQUILIZERS | | | | | | | |
| 29. INHALANTS | | | | | | | |
| 30. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | | | | |

How likely is it that your teachers in school would catch someone like yourself using or possessing the substance?

(Check only one for each substance)

| | (1) Very likely | (2) Likely | (3) Unlikely | (4) Very Unlikely |
|---|---|---|---|---|
| 31. ALCOHOL | | | | |
| 32. TOBACCO | | | | |
| 33. DEPRESSANTS, STIMULANTS, TRANQUILIZERS | | | | |
| 34. INHALANTS | | | | |
| 35. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | |

Whether or not you have ever used, have you ever observed or watched anyone whom you admire using any of the substances listed below?

(You may check more than one for each substance)

| | (1) No | (2) On TV or in the movies | (3) Your Parents | (4) Someone else in your family | (5) Someone about your age (not family) | (6) Someone older (not family) |
|---|---|---|---|---|---|---|
| 36. ALCOHOL | | | | | | |
| 37. TOBACCO | | | | | | |
| 38. DEPRESSANTS, STIMULANTS, TRANQUILIZERS | | | | | | |
| 39. INHALANTS | | | | | | |
| 40. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | | | |

If you have ever used it, check all those good things which you think have happened to you from using each of the substances.

If you have never used the substance, check all those good things which you think would happen if you did use it.

(You may check more than one for each substance)

| | (1) Fit into groups better | (2) Relieve boredom | (3) Help me study better | (4) A good high | (5) Relieve pain or sickness | (6) Relieve pressure of school | (7) No good things |
|---|---|---|---|---|---|---|---|
| 41. ALCOHOL | | | | | | | |
| 42. TOBACCO | | | | | | | |
| 43. DEPRESSANTS, STIMULANTS, TRANQUILIZERS | | | | | | | |
| 44. INHALANTS | | | | | | | |
| 45. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | | | | |

If you have ever used it, check all those bad things which you think have happened to you from using each of the substances.

If you have never used the substance, check all those bad things which you think would happen if you did use it.

(You may check more than one for each substance)

| | (1) Feel Guilty | (2) Drop in school grades | (3) Interefere with studying | (4) Loss of Health | (5) A habit | (6) A bad high | (7) No bad things |
|---|---|---|---|---|---|---|---|
| 46. ALCOHOL | | | | | | | |
| 47. TOBACCO | | | | | | | |
| 48. DEPRESSANTS, STIMULANTS, TRANQUILIZERS | | | | | | | |
| 49. INHALANTS | | | | | | | |
| 50. OTHER DRUGS (LSD, philophone, cocaine, narcotics) | | | | | | | |

For each statement below, please check whether you strongly agree, agree, disagree, or strongly disagree with it. (Check only one for each statement)

| | (1) Strongly Agree | (2) Agree | (3) Disagree | (4) Strongly Disagree |
|---|---|---|---|---|
| 51. It is all right for people to use drugs as long as they control it. | | | | |
| 52. Teenagers who use drugs really shouldn't be held responsible since they are under too much pressure to resist. | | | | |
| 53. It is wrong to use drugs but it can be justified for some people or situations. | | | | |
| 54. We all have a moral duty to abide by the law | | | | |
| 55. Religious beliefs play a important role in my life. | | | | |
| 56. The rules and moral beliefs which my parents live by are good for me too. | | | | |
| 57. It is wrong to use drugs. | | | | |
| 58. It is very important for me to get good grades in school | | | | |
| 59. I like school very much | | | | |
| 60. I feel very close to my parents. | | | | |
| 61. I feel very close to my friends. | | | | |
| 62. When I am away from home, my parents know where I am. | | | | |
| 63. It is very important for me to achieve my scholastic goals. | | | | |
| 64. It is very important for me to obtain a well paid, secure job following my graduation. | | | | |
| 65. If I want to obtain illegal drugs such as inhalants, marijuana, stimulants, I could do so easily. | | | | |
| 66. Observing other teenagers using alcohol, tobacco, or other substances has influenced me to use substances. | | | | |
| 67. Observing my parents or other adults whom I admire using alcohol, tobacco, or other substances has influenced me to use substances. | | | | |
| 68. Observing persons on TV, the movies, or web sites using alcohol, tobacco, or other substances has influenced to use substances. | | | | |
| 69. Observing advertisements for tobacco or alcohol has influenced me to use them. | | | | |

## Part VI

For each statement below, please check whether you strongly agree, agree, disagree, or strongly disagree with it.

(Check only one for each statement)

| | (1) Strongly Agree | (2) Agree | (3) Disagree | (4) Strongly Disagree |
|---|---|---|---|---|
| 1. I often act on the spur of the moment without stopping to think. | | | | |
| 2. I often do whatever brings me pleasure here and now, even at the cost of some distant goal. | | | | |
| 3. I frequently try to avoid projects that I know will be difficult. | | | | |
| 4. When things get complicated, I tend to quit or withdraw. | | | | |
| 5. Sometimes I will take a risk just for the fun of it. | | | | |
| 6. I sometimes find it exciting to do things for which I might get in trouble. | | | | |
| 7. If I had a choice, I would almost always rather do something physical than something mental. | | | | |
| 8. I almost always feel better when I am on the move than when I am sitting and thinking. | | | | |
| 9. I try to look out for myself first, even if it means making things difficult for other people. | | | | |
| 10. If things I do upset people, it's their problem not mine. | | | | |
| 11. I lose my temper pretty easily. | | | | |
| 12. Often, when I am angry at people, I feel more like hurting them than talking to them about why I am angry. | | | | |

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